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# PROVISIONAL SPECIFICATION FOR AN INVENTION **ENTITLED**

Invention Title:

FOR 16D PROTEINS, NUCLEIC ACIDS AND

METHODS BASED THEREON

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The invention is described in the following statement:

# FIELD OF THE INVENTION

This invention relates to the field of cancers and in particular to nucleotide sequences of the fragile site FRA16D, of the FOR16D gene and amino acid sequences of its encoded proteins, as well as derivatives and analogs thereof and agents capable of binding thereto, and uses of these, such as in diagnosis and therapy.

# **BACKGROUND OF THE INVENTION**

Cancers are a significant factor in mortality and morbidity, with onset rates of forms of cancer being quite high in all places of the world. Early detection greatly improves the chances of remission and considerably reduces the chance of the cancer metastasizing. The treatment of early stage cancers is also much more benign so that there are less severe residual effects resulting from the treatment. Accordingly early detection of cancers is a high priority in management of the diseases. Similarly treatment of various cancers are of mixed outcome and it is desirable to provide for alternative treatments at least for certain forms of cancers.

Cancers are of many different types and severity, however the uncontrolled proliferation of cancers cells is invariably associated with damaged DNA of one form or another. Some types of cancer are familial in the sense that there is an increased risk of contracting cancer, but the hereditary characteristics in most cancers are not simple and there is only usually a few fold increased risk among family members as compared to the general population. The DNA damage in most cancers are associated with somatic mutations the acquisition of which is thought to be associated with exposure to certain environmental factors.

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A very large number of genes have been identified as being associated with the onset of cancer and this reflects the complexity of the regulation of normal cellular proliferation. These genes can be categorised into three groups a first of which includes the so called oncogenes or protooncogenes which are often associated with positive control elements, enhancing cellular proliferation in the normal cellular cycle. Certain mutations in these positive control elements trigger uncontrolled proliferation. A second group are the so called tumour suppressor genes, which are genes that normally suppress proliferation, and inactivation or reduction in activity of these leads to abnormal proliferation. These tend to act in a recessive fashion. A third group are the so-called mutator genes which are normally responsible for maintaining genome integrity during the proliferative cycle, and if these are defective then the general mutation rate increases and the consequent chance of providing for a transforming mutation increases.

One mapping technique to locate the site of chromosomal lesion in a cancer cell is known as the loss of heterozygosity (LOH) technique. Eukaryotes have two copies of each chromosome, apart from the sex chromosomes, and as a result cancers that result from mutations in a tumour supressor generally require two mutations. Sometimes one mutation will be inherited, and a second mutation is required to trigger the cancer leading to loss of function of both copies of the gene in the individual. Quite often these secondary mutations will be deletions and their location can be detected by checking the presence of highly polymorphic genetic markers from the tumour tissue and from another site such as blood. The markers that are heterozygous in normal tissue and have become homozygous in the cancer tissue can give an indication of the lesion concerned.

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The LOH technique is however quite difficult to routinely perform and interpret reliably, this is particularly so because any tumour sample usually is also contaminated by non-tumour tissue, and it is at times difficult to distinguish because of a decreased relative intensity, and quantitative amplification techniques will often need to be employed. Another limitation relates to the availability of a suitably dense array of markers which generally leads to the detection only of larger deletions. A single tumour may have LOH in many distinct regions, but LOH will only be detected in those regions that have been tested.

The use of these LOH studies have identified a number of sites some of which correspond to regions of the chromosome termed fragile sites.

25 Fragile sites have been proposed to have a determining role in cancer associated chromosomal instability. There are in excess of 100 fragile sites in the human genome of which the fragile site FRA11B is located within the CBL2 proto-oncogene (Jones et al., 1994, 1995) and the FRA3B, FRA7G and FRA16D sites have been located within or adjacent to regions of instability in cancer cells (Ohta et al., 1996; Sozzi et al., 1996;
30 Engelman et al., 1998; Huang et al., 1998a,b).

There are two distinct forms of chromosomal anomaly referred to as fragile sites (Sutherland et al., 1998)). The 'rare' form is polymorphic in the population and is accounted for by the expansion of repeat DNA sequences beyond a copy number limit. The 'common' form is present at many loci in all individuals. Despite determination of the complete sequence analysis of the common fragile site, FRA3B (Boldog et al., 1996; Inoue et al., 1997; Mimori et al., 1999) and the partial sequence analysis of the common fragile sites, FRA7G and FRA7H (Huang et al., 1998a,b; Mishmar et al., 1998) the molecular basis for common fragile sites is not yet understood.

Fragile sites are also distinguished by the culture conditions required for their induction. Common fragile sites are (mainly) induced by aphidicolin, whereas the rare fragile sites are induced by either high or low concentrations of folate or the AT-rich binding chemicals such as distamycin A or by bromodeoxyuridine. The role of chromosomal fragile sites in human genetic disease was thought to be restricted to fragile X syndrome caused by the *FRAXA* fragile site, however a mild form of mental retardation has been associated with *FRAXE* and the *FRA11B* fragile site appears to predispose to 11q breakage leading to some cases of Jacobsen syndrome.

Recent detailed molecular analysis of fragile site loci has demonstrated that the common fragile site FRA3B is located within a region subject to localised deletion and that this deletion is frequently observed in certain forms of cancer (Ohta et al., 1996; Sozza et al., 1996). FRA3B lies proximal to the major region of LOH on chromosome 3p previously shown to be responsible for deletion of the VHL tumour suppressor (Gnarra et al., 1994). The cancer-associated FRA3B deletions can result in inactivation of a gene (FHIT-Fragile Histidine Triad) which spans the fragile site (Croce et al US patent 5928884). The FHIT gene product has been shown to have a role in tumour growth (Siprashvilli et al., 1997) but quite what the significance or nature of that role is subject of active research at the present.

Another common fragile site FRA 7G has also been shown to be located within an about lMb region of frequent deletion in breast and prostate cancer (18,19) as well as squamous cell carcinomas of the head and neck, renal cell carcinomas, ovarian adenocarcinomas and colon carcinomas (20). The human caveolin-1 and -2 genes are located within the same commonly deleted region as FRA 7G. Caveolin-1 has been shown to have a role in the anchorage dependent inhibition of growth in NIH 3T3 cells (21). The caveolins are therefore candidates for the tumour suppressor gene presumed to be located in the FRA 7G region (20).

Another common fragile site which is aphidicolin inducible is the FRA16D site. FRA16D has been localised at 16q23.2. within a large overlapping region of chromosomal instability in breast and prostate cancer as defined by loss-of-heterozygosity (24,25). One study has found that a significant proportion (77%) of breast cancers carries a deletion at 16q23.2, including the marker D16S518 in the immediate vicinity of FRA16D (24).

There has been no characterisation of a nucleic acid or protein associated with the FRA16D site and the physical location of FRA16D has not yet been determined. Such

a characterisation is desirable to enable potentially early diagnosis and assessment of risk as well as potentially providing for a therapeutic treatment.

### SUMMARY OF THE INVENTION

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The inventors have produced a detailed physical map of the FRA16D region which provides markers to identify a relationship between this fragile site and DNA instability in neoplasia and which, further, may allow better diagnosis of cancers associated with the region. This analysis reveals the existence of an intimate relationship between the location of FRA16D and homozygous deletions in various tumours, culminating in the coincidence of two tumour cell DNA breakpoints with the most likely position of the fragile site.

The inventors have also characterised the nucleic acid associated with FRA16D

15 especially by nucleic acid sequencing. Analysis of the DNA sequence has identified a number of introns and exons which are found to exist in four different splice variants of what will be termed protein FOR16D. RNA analysis has also been conducted and thus far two species of mRNA associated with the region have been detected.

In a first aspect the invention could be said to reside in a method of detecting genetic variations of a 16q23.2 target in the 16q23.2 region of the chromosome, said method comprising the steps of contacting target nucleic acid with one or more oligonucleotides suitable for use as hybridisation probe or PCR priming specific for binding the 16q23.2 specific target, and ascertaining the binding of said oligonucleotide.

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It will be understood from the specification that the 16q23.2 specific target might be selected to be within the group comprising the FOR16D gene, the FRA16D site, or mRNA encoding FOR16D protein or all of these collectively. The target may include chromosomal rearrangements and mutations thereof and the rearrangements or mutations may, in one form, be cancer associated. The variations may include markers in the region such as set forth in this specification including in figures 1, 2, 7 and 8.

The 16q23.2 target within the FOR16D gene might be selected from one or more of the group comprising exons a, 1, z, w, 2, 3, 4, 5, 6 or x or introns located therebetween or control elements in other adjacent regions that effect an altered expression of the FOR16D gene. Such adjacent regions may have a promoter, enhance elements or other regulatory elements. The target may be any one of the splice variants currently identified as FOR16DI, FOR16DII, FOR16DIII or FOR16DIV or it might include other combinations of two or more of the exons.

It is noted in particular that breakpoints of three out of five 16q23.2 translocations associated with multiple myeloma map within the alternate splice of this FOR16D intron, that is, between exons 4 and x, and in one form a preferred target is the intron between exons 4 and x or a portion thereof.

In some circumstances the method might be used to detect any rearrangements in a larger target area. Thus it might be desired to use a plurality of oligonucleotide which might be selected to bind to a range of target binding sites within the 16q23.2 specific target to detect for a range of changes. This might be used for example to detect for chromosomal rearrangements such as deletions within the FRA16D site or beyond that in the broader 16q23.2 region. The plurality of oligonucleotides or a plurality of specific binding sites of the 16q23.2 target are preferably spacially separated so that binding of each of the plurality of oligonucleotides or binding to the plurality of specific binding sites can be separately ascertained. The spacial separation might, for example, be conveniently provided as an array on a solid support, for example in a form that is common referred to as a gene chip (see for example patent specifications US 5288514 and US 5593839). Instead of a plurality of oligonucleotides it may be desired that the target be probed by a single oligonucleotide.

Alternatively the target area might be small, thus for example the method might be used to ascertain the presence or absence of a particular mutation or allelic variation in the 16q23.2 target. Thus for example a target of the z, w, 5 or 6 or x exon will distinguish between FOR16DI, FOR16DIV, FOR16DII and FOR16DIII transcription variants. A small target area might also be adequate for use with gross chromosomal rearrangements in so far as this might be used to determine the presence or absence of junctions of known chromosomal rearrangements, or alternatively the binding or non binding of one or more of a plurality of oligonucleotides. The target area might also be selected to allow for assessment of the presence or absence of cancer associated point mutations or small DNA rearrangements, using suitably selected oligonucleotides.

The base sequence of the oligonucleotide chosen will depend upon several factors known in the art. Primarily the sequence of the oligonucleotide will be determined by its capacity to bind to the target nucleic acid sequence. The nature of the sequence will depend to some extent on the stringency of the hybridisation required, and whether or not it is desired for one oligonucleotide to detect variation in sequence or not. If variation in one nucleotide is required the stringency of the hybridisation will be high. The length of the oligonucleotide will also be determined by the stringency of the reaction required.

The binding might be by *in situ* hybridisation of a chromosomal spread, or other suitable spacial arrangement of the target region such as for example on a so called gene chip. Such hybridisation methods will generally provide for an oligonucleotide and be capable of binding the target over a span of at least 15 nucleotides. In the case of hybridisation techniques the oligonucleotides will generally carry a label which can be detected by known measuring methods, especially when bound to the 16q23.2 target. Such labels might include radiolabels such as <sup>32</sup>P or a fluorescent marker.

The method might require a preamplification step whereby the target nucleic acid is amplified, to make it easier to ascertain the binding or non binding of the nucleic acid to the target site.

On the other hand the oligonucleotide might be suitable for amplification of a segment of the target nucleic acid such as by PCR, in which case the size of the target may be somewhat different. With this variation two oligonucleotides might be selected, to provide for amplification of at least part of the target nucleic acid, at least one of the oligonucleotides is required to bind in the target.

The target nucleic acid might be presented in any one of a number of physical forms. Nucleic acid from an individual might be isolated and perhaps digested by a restriction enzyme and spread out such as by electrophoresis on an agarose or polyacrylamide gel, so that binding of the oligonucleotide can be effected whilst the target nucleic acid is supported by the gel or this might be supported on other solid medium such as a gene chip or a metaphase chromosomal spread. Alternatively the oligonucleotide or oligonucleotides might be fixed, and the target nucleic acid might either be diminished in size, or not, and then binding of fragmented targets to the fixed oligonucleotide determined.

The target nucleic acid might be in the form of chromosomal DNA, or might be cDNA or mRNA.

This method might also be used to detect other variants, homologs or analogs of the FRA16D site, FOR16D gene, or other nucleic acid sequences disclosed in this specification. Thus it might be, for example desirable to determine analogous gene in livestock, domestic, laboratory or sporting animals. Alternatively one might wish to determine another analogous protein that plays a similar role in humans.

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In a second aspect the invention relates to a method of detecting the number of alleles for one or more markers in the 16q23.2 target, and this may be a means of perhaps providing a measure of the loss of heterozygosity in an individual. This aspect of the invention therefore relates to locating a deletion that overlaps with the FRA16D region.

- The method might be achieved by providing a first set of one or more oligonucleotides and a second set of one or more oligonucleotides the first set of oligonucleotide being specific for a first variant of the target nucleic acid, the second set of oligonucleotides being specific for a second variant of the target nucleic acid, the first and second set of oligonucleotides being labelled so as to be capable of being distinguished, and the method comprising the steps of comparing the proportion of binding of the first and second set of oligonucleotides. A method of this sort is set forth in US patent specification 5928870 to Lapidus *et al*, which for purposes of practicing the invention is incorporated herein by reference.
- 15 It will be understood that the above method is useful in categorising the risk of contracting certain types of cancer associated with the FRA16D fragile site or other portion of the 16q23.2 region.
- In a third aspect the invention could be said to reside in a method of determining the
  level of expression of the FOR16D gene or any one or more exon thereof, by
  determining the level of mRNA expression using a probe specific for the FOR16D gene
  or exon thereof. This might be used to determine the dysregulation of FOR16D
  expression. It will be understood that it may be desired to also determine the level of
  expression of variants of the gene or exons including rearrangements and mutants
  including those associated with cancers. This is likely to give a prognosis in relation to
  at least certain cancers that are currently contracted or perhaps an indication of the risk
  of contracting one or more types of cancer.

In a fourth aspect the invention could be said to reside in an isolated nucleic acid molecule selected from the group comprising

- a) nucleic acids sequences disclosed in the figures hereto or parts thereof
- b) FRA16D site

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- c) FOR16D gene, or exons thereof
- d) mRNA of the FOR16D gene
- e) cDNA of the FOR16D gene
  - f) variants of the above including, chromosomal rearrangements and mutations of sequences set out in a) to e) including those variants associated with cancers

- g) nucleic acid sequence capable of hybridising specifically to any sequence of a to e above or its complement, and especially those capable of doing so under stringent conditions.
- The nucleic acid molecule might include a mosaic from within the above molecules such as a combination of two or more of the group comprising the following, exon a, 1,z, w, 2, 3, 4, 5, 6, or z or introns located therebetween or control elements in other adjacent regions that effect an altered expression of FOR16D, and it will be understood that such a mosaic includes a molecule encoding cDNA of variants of the FOR16D protein, whether a wild type allele, a mutated version, or otherwise rearranged. It will thus be understood that the invention includes antisense molecules to any regions of control that might be contemplated above. Such antisense molecules may be used to vary the expression of such protein as are produced by the FOR16D gene or perhaps adjacent genes such as the c-MAF gene.

It will be understood that such nucleic acids include portions of nucleic acids that are suitable for use as primers or probes.

The invention may also be said to include nucleic acids encoding a tumour associated gene from a human or animal capable of hybridizing with any nucleic acid of the fourth aspect of the invention.

In a fifth aspect the invention could be said to reside in a recombinant vector including one or more nucleic acid sequences as set out above, and preferably operably linked to a control element such as might include a functional promoter. The recombinant vector might be used as an expression vector to produce or overproduce FOR16D protein or variants thereof, or perhaps overproduce nucleic acids associated with the FOR16D gene such as an antisense molecule. Suitable vectors are generally available commercially or may be constructed as described elsewhere or as is known in the art.

In a sixth aspect the invention could be said to reside in an isolated protein molecule, the protein molecule being selected from the group comprising the following:

a) a FOR 16D protein, or

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b) a mutant or variant FOR16D protein which might optionally be associated with a cancer

In a seventh aspect the invention could be said to reside in a polypeptide produced by any two or more exons selected from the group comprising a, 1, z, w, 2, 3, 4, 5, 6, x joined, said exons being either as complete exons or partial, and may be variants.

The invention might also encompass a purified cancer associated protein including a string of amino acids unique to a FOR16D protein and more particularly as set out in any one of figures 13 A to D, preferably said amino acid string being at least 10 amino acids long and exhibiting at least 70% amino acid homology more preferably at least 90% homology.

The protein may have an oxidoreductase domain or may have a role in DNA replication of chromosomal division.

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In one form the purified cancer associated protein includes an amino acid string with an amino acid sequence homology of greater than 70% but more preferably greater than 90% with the amino acid string LPPGWEERT, and is associated with DNA replication or chromosomal division. Such a purified protein may be used for treatment of certain cancers.

In another form the purified cancer associated protein includes an amino acid string with an amino acid sequence homology of greater than 70% but more preferably greater than 90% with an amino acid string selected from the group comprising:

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VVVVTGANSGIG, MTLDLALLRSVQ, PLDVLVCNAA and VNHLGHFYL.

In an eighth aspect the invention includes an agent capable of selectively binding a FOR16D protein or fragment or variant thereof. Such agents may be particularly useful in diagnostic methods. Such an agent may also be used to bind a protein containing a string of amino acids unique to FOR16D or variant thereof and in particular such variants that are currently known to be associated with one or more forms of cancer. The agent may selectively bind to the variant FOR16D as compared to an FOR16D protein not associated with cancer. Such an agent might be an agonist or an antagonist of FOR16D function. It might therefore be desired to provide for a number of agents each capable of selectively binding to a separate one of a number of variants of FOR 16D so that it is possible to distinguish between variants. Thus for example it might be desired to target the C terminus of respectively FOR16DII, FOR16DII, FOR16DIII and FOR16DIV to distinguish between these three proposed forms. The invention therefore also encompasses a method of detecting variants of the FOR16D protein. Measuring the relative levels of these four and other forms of FOR16D protein is likely to give an indication of regulatory perturbations which may be associated with certain cancers.

The nature of the agents can vary depending on their intended use. Thus for a diagnostic method an antibody or fragment thereof, such as an Fab fragment, of a recombined molecule carrying the variable region of an antibody recognising the desired portion of the FOR16D may be adequate. The antibody might be polyclonal however preferably the antibody is a monoclonal antibody prepared by known techniques.

Alternatively small molecules capable of binding the desired portion of the FOR16D protein may be used, such small molecules might include peptides, proteins, nucleic acids or sugars or other organic molecules. These can be isolated by screening using known techniques from libraries of suitable compounds. Such small molecules can then be tested for antagonist or agonist properties to potentially provide a therapeutical agent which have the potential to be used in the treatment of cancers. These agents would be administered by clinicians in an appropriate manner.

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Also useful therapeutically might be the provision of an isolated protein of the seventh aspect of the invention, particularly those forms that mimic the action of a wild type FOR16D, and perhaps simply the purified FOR16D. It is anticipated that the FOR16D protein in at least one of its forms is a tumour suppressor, that is, its absence increases the risk of aberrant cell division leading to a cancer. Accordingly one form of therapy may include the administration of such a protein to an individual who is considered at risk, particularly if they are found to have a faulty FOR16D protein. Such administration would be in conformity with normal practices in a suitable excipient. It may also be the case that the aberrant FOR16D protein actively enhances tumourigenesis and accordingly it might be appropriate to administer an antagonist of the aberrant variant at the same time. Alternatively the administration of the antagonist on its own may be of therapeutic benefit.

Another form of treatment which is becoming increasingly contemplated is to provide
for a method of gene therapy and one method of undertaking cell therapy is to provide
for certain progenitor cells which include incorporated therein a vector capable of
producing an appropriate form of FOR16D protein. Accordingly a ninth aspect the
invention could be said to reside in a recombinant host cell having stably inserted
therein DNA of any one of the forms of DNA contemplated in the third aspect of the
invention. In preference the DNA is capable of producing a tumour suppressing form
of FOR16D, and most conveniently this will be a wild-type form of FOR16D, which
may simply be a cDNA molecule or the FOR16D gene. Alternatively however it may
also be desired to have a host cell which has a DNA sequence capable of producing an
antisense molecule in the case where an aberrant tumour promoting form of the

FOR16D molecule is produced by the individual to be treated, the antisense capable of reducing the level of expression of the FOR16D molecule.

Methods of gene therapy are not limited to cases where the appropriate nucleic acid is delivered in a host cell, but also includes the administration of the nucleic acid specifically to the site of interest.

The recombinant host cell may not necessarily be used for therapeutic purposes, it may also be used for over-expression of the protein, or a nucleic acid associated with FOR16D, or the 16q23.2 region, and may therefore be bacterial, yeast, plant, animal, preferably mammalian or human.

Additionally the invention contemplates the provision of a transgenic non-human animal carrying recombinantly altered or overexpressing 16q23.2 DNA, preferably FRA16D or FOR16D gene, or other DNA of the fourth form of this invention. The recombinant DNA might be incorporated into the chromosome of the host, alternatively the host cell may carry said recombinant DNA in a self replicating element such as a plasmid.

The agents of the eighth embodiment may be used for level of expression of FOR16D, variants or exons thereof, to determine whether there is an altered level of expression. Thus a western blot using a labelled agent may be used for the purpose using known techniques. This is another means of measuring dysregulation of expression.

#### BRIEF DESCRIPTION OF THE DRAWINGS

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Figure 1: Positional cloning of *FRA16D* and location of loss of heterozygosity and translocation in cancer.

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A. The locations of loss-of-heterozygosity regions in breast and prostate cancer and the approximate location of the FRA16D fragile site are indicated with respect to genetic markers (downward arrows) in the 16q23.2 region. Markers in the vicinity of FRA16D are shaded. The approximate location as determined by Chesi et al. (1) of multiple myeloma breakpoints and the c-MAF gene (bar) are also shown by upward black arrows. Not to scale.

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B. Map of the contig of YAC subclones across the *FRA16D* region with respect to genetic markers and *FRA16D*. Open boxes indicate those YACs which map by fluorescence *in situ* hybridisation proximal to

FRA16D, grey boxes are those which span FRA16D and black boxes indicate those YACs which map distal to FRA16D. Not to scale.

Figure 2:

Positional cloning of FRA16D and the extent of heterozygous and homozygous deletion in the AGS tumour cell line.

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A. Pulsed-Field gel map of ~lMb of the 'Right Hand Side' (RHS) of YAC My801B6 and the location of BACs, genetic and STS markers (key markers are boxed). Restriction sites between Afma336yg9 and WI2755 are shown in B. The AGS stomach cancer cell line homozygous deletion is indicated - shaded circles denote the presence and open circles the absence of PCR products for the STS markers. Maximal region of heterozygous deletion in AGS cell line is indicated by polymorphic D16S518 and D16S3029 PCR products, indicated as A and B alleles. The two AGS cell line chromosome 16s are indicated by shaded bars.

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B. Restriction map of the critical FRA16D region (Afma336yg9 to D1653029) showing the location of key members of the lambda subclone tile path used for FISH in figure 3. Clones designated  $\lambda$ -n are from 325M3; others are from 801B6. Open boxes represent those subclones found to map proximal (on the basis that >85% of their FISH signals were proximal to FRA16D), grey boxes those which appear to span the fragile site (less than 85% on one side or other of FRA16D) and black boxes those which are distal to the fragile site (on the basis that >85% of their FISH signals were distal to FRA16D).  $\lambda$  clones which gave high background on FISH were not scored. These and other  $\lambda$  clones for which FISH data were not obtained are included as thin boxes. STS localisation of the AGS homozygous breakpoints are indicated by the presence (shaded circles) and absence (open circles) of

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Fluorescence *in situ* hybridisation (FISH) of lambda subclones against *FRA16D* expressing chromosomes.

PCR products.

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Figure 3:

Each panel contains two FRA16D expressing partial metaphases, with and without FISH signal merged. In each case the width of the gap or break at the fragile site is greater than the width of the chromatid. (a)  $\lambda 504$  showing signal proximal to FRA16D; (b)  $\lambda 181$  showing signal

proximal and distal to FRA16D; (c)  $\lambda 191$  (upper) and  $\lambda 8$  (lower) showing signal distal to FRA16D. Images of metaphase preparations were captured by a cooled CCD camera using the ChromoScan image collection and enhancement system (Applied Imaging Int. Ltd.). FISH signals and the DAPI banding pattern were merged for figure preparation.

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Figure 4:

Fluorescence *in situ* hybridisation mapping of the lambda subclone tile path across *FRA16D*.

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The individual lambda clones were scored against chromosomes where the FRA16D gap or break was greater than the chromatid width. Each increment represents a single FISH signal. n = number of chromosomes scored. Scores were plotted as proximal (p) and distal (d) with respect to FRA16D. Maximum location for FRA16Ds indicated by arrows. Location of BAC clones 325M3 and 353B15 is also shown. The boxed lambda contig subclones indicate those for which FISH signal results with respect to the FRA16D fragile site were obtained - open boxes, had >85% signal proximal to FRA16D; grey boxes, spanning (<85% signal on one side or other of FRA16D) and black boxes, had >85% signal distal to FRA16D. While this figure is not to scale the location of the lambda clones can be determined from their position in figure 2. Thin boxed lambda clones are those for which FISH data was not obtained.

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25 Figure 5: Duplex PCR deletion detection at the FRA16D locus in tumour cell lines.

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PCR products from the duplex of STSG-10102 and dystrophin DMD Pm were subjected to agarose gel electrophoresis and ethidium bromide staining. Template DNAs were seven tumour cell lines and blood bank and no DNA controls. Markers are HpaII digested pUC19. The position of the STSG-10102 and DMD Pm PCR products are indicated by large grey-filled arrows while the primer dimer PCR artefact is indicated by a small white arrow.

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Figure 6:

Is a diagrammatic representation of FOR16D transcripts with respect to FRA16D and common homozygous deletions. A. summarises the data in figure 2. B shows the position of two BACs and below that shows the DNA sequences that have been obtained. C. shows three of the four

predicted variants of FOR16D, and indicates the ESTs that have been

utilised to determine the open reading frames of the introns that

collectively provide for the alternate splice variants of FOR16D transcripts. Also shown are the sequence positions of the exons shown 5 from the position of the respective EST from which sequence was obtained. Figure 7 Is a second diagrammatic representation of FOR16D alternate transcripts with respect to FRA16D and common homozygous deletions. A. and 10 B. are duplications of Figure 1 (above). C moving from top to bottom shows to relative position of certain mutations relative to a restriction enzyme map of the YAC My801B6, as well as the relative location of two further YACs My891F3 and My972D3. Below that are shown the position of four BACs, below that are shown the position of deletions in 15 the cell lines AGS and HCT116, also shown is the position of the c-MAF oncogene. Below that are shown the regions that are sequenced, and the location of three multiple myeloma translocation break points. Following that are shown the four known alternate spliced transcripts and a listing of the EST that confirm the position of the four transcripts. 20 is a diagrammatic representation of four of the predicted splice variant Figure 8 transcripts as well as representation of a Northern blot analysis of RNA from various physical locations indicated using a portion of exon 3 as a probe. A similar result is found when a probe from exon X is used. 25 Figure 9 is a composite DNA sequence of the predicted FOR16DI transcript. The composite has been constructed by conjoining ESTs as indicated. Figure 10 is a composite DNA sequence of the predicted FOR16DII transcript. 30 The composite has been constructed by conjoining ESTs as indicated. Figure 11 is a composite DNA sequence of the predicted FOR16DIII transcript. The composite has been constructed by conjoining ESTs as indicated. 35 Figure 12 is a composite DNA sequence of the predicted FOR16DIV transcript. The composite has been constructed by conjoining ESTs as indicated.

	Figure 13	are composite amino acid sequences predicted for the sequences for FOR16DI, FOR16DII, FOR16DIII and FOR16DIV as shown in figures 9 to 12.
5	Figure 14	sets out certain amino acid homologies of the predicted amino acid sequence for FOR16DIV and FOR16DI, using the Blast program (Altschul et al (1997) Nucleic Acids Res. 25:3389-3401) and the swissprot database. Each comparison sets out the swiss prot number
10		assigned to the sequence compared with, the FOR16D amino acid sequence is on top (:) indicates sequence identity and (+) indicated conserved substitution the bottom sequence of each comparison is the sequence accessed from the swissprot database.
15	Figure 15	sets out DNA sequences for each of the exons identified for the FOR16D protein.
	Figure 16	is about 270kb of DNA sequence that overlaps and defines within it the FRA16D fragile site, which is shown to reside between exons 4 and 5.
20	Figure 17	is DNA sequence for contig #208 as indicated in figure 6, and which encompasses exon 3,
25	Figure 18	is DNA sequence for contig #779 as indicated in figure 6, and which encompasses exon 2,
	DETAILED	DESCRIPTION OF THE INVENTION.

# EXAMPLE 1 - MAPPING OF THE FRA16D FRAGILE SITE

## 30 Materials and methods

Isolation of DNA probes and YACs in the FRA16D region

Nine DNA probes, ACH202 (D16S14), c311F2, c302A6 (D16S1075), c301F10

(D16S373), 16-87 (D16S181), c306D2, 16-08 (D16S162), c307A12 and CRI-0119

(D16S50) which had been physically mapped into the 16q23 region (30) were chosen

for fluorescence in situ hybridisation (FISH) against FRA16D expressing chromosomes. Four of these markers mapped within the same somatic cell hybrid breakpoint interval defined by the cell lines CY113(P) and CY121 (30). One of these, c306D2 mapped proximal to FRA16D by FISH while the others, c307A12, CRI-0119 and 16-08 mapped distal to FRA16D. These probes were therefore used as starting

points to isolate a contig of cloned DNA spanning FRA16D. In the Los Alamos National Laboratory database (www-ls.lanl.gov) an STS sequence from c306D2 was found within the CEPH YACs My903D9, My912D2 and My933H2 while an STS in c307A12 was found in My891F3 and My972D3. These YACs were obtained from CEPH and the prepared DNA subjected to Pst I digestion, Southern blotted and probed with 16-08, 16-87, CRI-0119, c306D2 and c307A12 in succession in order to confirm their content. In addition a search of the Whitehead Institute database (www-genome.wi.mit.edu) revealed that the two sets of YACs were joined into a contig by the YACs My801B6, My845D9 and My944D8. Each of these YACs was used as template DNA to assess STS content (D16S518, Afma336yg9, WI2755, STSG-10102 and D16S3029) and subjected to FISH to assess position with respect to FRA16D (Figure 1B).

#### Additional probes, STSs and BACs from the FRA16D region

- Additional probes were generated from the YAC 801B6 by subcloning Pst I digests of YAC DNA and screening with total human DNA as probe. These subclones were digested with Hinc II to identify and isolate non-repetitive DNA fragments as probes. This generated markers H13m, H22s, H23m, H29m and H40m. Genome System Inc. BAC library filters were screened with the probes D16S518, Afma336yg9, WI-2755,
   STSG-10102, H22s, H29M and D16S3029 and nine BAC clones including 379C2, 325M3 and 353B15 were identified. An additional STS, named 2AS, was established by 'bubble' PCR from the end-fragment of BAC 353B15 and was isolated as described
- by Gecz et al (31). Briefly, the BAC DNA was digested with Alu I and ligated to the annealed bubble linkers. The final PCR w as carried out with a combination of Not I-A bubble primer and Sp6-promoter primer as described except an annealing temperature of 55°C was used. These STSs and hybridisation probes were used to establish restriction maps of the YAC My801B6 and the BACs (Figure 2A).

#### Subcloning and contig assembly

30 The YAC My801B6 and the BAC 325M3 were used as DNA templates for establishing a lambda subclone libraries in λGEM11 or λGEM12 vectors (Promega) according to the supplier's protocol. My801B6 and 325M3 appeared to have intact human DNA inserts, based on comparative pulsed field gel mapping of the YACs and BACs across the region (data not shown).

#### Fluorescence in situ hybridisation

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FRA16D-expressing metaphases were obtained from peripheral blood lymphocytes by standard methods. Briefly, cultures were grown for 72 hours in Eagle's minimal essential minimal medium, minus folic acid, supplemented with 5% fetal calf serum.

Induction of FRA16D was with 0.5uM aphidicolin (dissolved in 70% ethanol) added 24 hours before harvest (32). DNA clones were nick-translated with biotin-14-dATP, pre-associated with 6ug/ul total human DNA, hybridised at 20ng/ul to metaphase preparations, and detected with one or two amplification steps using biotinylated 5 anti-avidin and avidin-FITC as previously described (33). Hybridisation signal was visualised using an Olympus AX70 microscope fitted with single pass filters for DAPI (for chromosome identification), propidium iodide (as counterstain) and FITC. FRA16D-expressing chromosomes were scored for signal only when the width of the fragile site gap was greater than the width of one chromatid, so that signal was 10 unambiguously proximal or distal to the gap (Figure 3). Only fluorescent dots which touched chromatin were scored as signal - the few fluorescent dots which lay within the fragile site gap but did not touch proximal or distal segments were therefore not scored as signal since there was a possibility that they comprised non-specific background. Lambda clones which gave very poor FISH results (high non-specific hybridisation to 15 other chromosomes) were not able to be scored with respect to the fragile site. This is likely to be due to the large amount of repetitive DNA within these particular clones see below.

#### Tumour cell lines

- The tumour cell lines LoVo, HT29, Kato III, SW480, AGS, MDA-MB436 and LS180 were purchased from the American Type Culture Collection. LoVo and AGS cells were grown in Hams F12 medium with 2mM L-glutamine, 10% fetal calf serum in 5% CO<sub>2</sub>, Kato III cells were grown in RPMI1640 medium with 2mM L-glutamine, 20% fetal calf serum in 5% CO<sub>2</sub>, HT29 cells were grown in McCoy's 5a medium with
   1.5mM L-glutamine, 10% fetal calf serum in 5% CO<sub>2</sub>, LS180 cells were grown in Eagle's minimal essential medium with 2mM Lglutamine and Earle's salts and non-essential amino acids, 10% fetal calf serum in 5% CO<sub>2</sub>, SW480 cells were grown in Leibovitz's L15 medium with 2mM L-glutamine and 10% fetal calf serum, MDA-MB-436 cells were grown in Leibovitz's L15 with 16µg/ml glutathione and
   0.026units/ml insulin.
- PCR detection of homozygous deletion in tumour cell DNAs

  PCRs for the detection of individual sequence tagged sites from across the FRA16D region were duplexed (34) with control PCRs from the dystrophin gene on the X

  chromosome (DMD Pm or DMD49, ref 35) or the APRT gene on chromosome 16

  (33). This allowed verification that the PCR reaction was working in the absence of a FRA16D region PCR product (Figure 4). Suitable PCR primers for Alu29, 17Sp6, Alu20, 178poly, 5.1A6, RD69, IM7 were used or for 504CA, forward 5'-AACACAGCTCTTATCACATCC-3', reverse 5'-TGGCTGTAmGTCAGAACTG-3';

while others were as given in database accessions, D16S518 (GenBank Z24645), Afma336yg9 (GDB 1222843), WI2755 (GenBank G03520), STSG-10102 (GenBank Z23147), D16S3029 (GDB 605884), WI-17074 (G22903), IM9 (GenBank R05832), D16S3096 (GenBank), D16S516 (GDB 200080). PCRs for GenBank AA368108 (forward 5'-TAATCCTCAGCCTCTAGAATGCCT-3', reverse 5'-GTATGATGATTTTCAGGGAGAAAC-3') and GenBank AA398024 (forward 5'-TGTCCTCAACTGATTCTTACAAAC-3, reverse 5'-TCAATGGGTTAGGCACAGACC-3') were derived from partial sequence analysis of BAC353B15. Control PCRs for FRA3B deletions were D3S1234 (GDB 186387), D3S1300 (GDB 188420) and D3S1841 (GDB 254090).

#### Results

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Positional cloning of FRA16D

A contig of YAC clones was established in the 16q23.2 region between markers c306D2 and c307A12 which were found by FISH to map proximal and distal to FRA16D, respectively (Figure 1B). The individual YACs from this contig were also used as hybridisation probes to further localise the fragile site. These experiments identified the YAC 801B6 as spanning FRA16D, and therefore this YAC was used as a source of DNA for subcloning the region to provide shorter DNA fragments for further refinement of the fragile site position. In addition, BAC clones were identified from the region to provide redundancy of cloned human DNA in an effort to avoid potential problems of instability of human DNA in YACs, as has previously been noted for other fragile site regions, including FRAXA (37), FRA10B (38 and O. Handt, pers. comm.) and a Chinese hamster aphidicolin inducible fragile site region (39).

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A pulsed-field gel restriction map of YAC 801B6 was constructed by using *HincII* restriction fragment subclones of the YAC for use as hybridisation probes (H13m, H22s, H23m, H29m and H40m) (Figure 2A). The position of the BACs (379C2, 325M3 and 353B15) with respect to the YAC restriction map was determined by both the restriction mapping of the BACs and the positioning of common markers by PCR or hybridisation (Figure 2A). The STS (D16S518, Afma336yg9, W12755, STSG-10102 and D16S3029) content of the YACs and BACs was also determined to assist in map construction.

35 Subclone libraries of DNA from YAC 801B6 and BAC 325M3 were generated using the lambda vectors λGEM12 and λGEM11 (Promega), respectively and assembled into a contig by end-fragment hybridisation and restriction mapping. The integrity of the YAC restriction map was verified by comparison with that of the BACs, 325M3 and

353B15. For the region between the BACs the integrity was verified by the use of long range PCR using human chromosomal DNA as template. (data not shown).

Localisation of FRA16D by fluorescence in situ hybridisation (FISH)

- There have been difficulties in determining the precise localisation of common chromosomal fragile sites using FISH (refs FRA3B (13, 40,41,42), FRA7G (18,19) and FRA7H (43). The FISH data have been interpreted as due to the fragile sites being spread out over long DNA sequences (eg 100's of kb) or that there are multiple fragile sites at a single locus. An alternative explanation is that the DNA in the immediate vicinity of the fragile site is not tightly 'packaged' into chromatin. We therefore chose to score only those chromosomes where the width of the gap or break at the FRA16D fragile site was greater than that of one chromatid (Figure 3). This approach was intended to reduce the possibility that the 'unpackaged fragile site DNA' might be
- looping back over the distant side of the fragile site and therefore give a false

  'spanning' signal particularly for probes that are very close to or within the fragile site region. In addition, while the use of pre-reassociation in the hybridisation process dramatically improved the signal to noise ratio, it did render repeat rich regions poor hybridisation probes. This was particularly evident in the *FRA16D* region where there is an abundance of DNA repeat sequences of various kinds.

The results of the FISH experiments are plotted in figure 4. The closest clearly proximal probe to FRA16D is λ1-44 while the closest unequivocally distal probe is λ433. These probes map at a distance of ~200kb apart. However, this 200kb region includes consistent scatter of distal signal around λ1-38 and λ1-27 and the poor hybridisation between λ181 and λ511 (due to repetitive DNA content). Therefore this 200kb defined by FISH analysis is likely to be the maximum sequence required to define FRA16D rather than provide any evidence that the fragile site is spread over

such a distance.

Detection of homozygous deletion in tumour cell lines
 The FRA3B fragile site - FHIT gene intron 4 region is a frequent site of deletion in various types of cancer (8). Homozygous FRA3B deletions have been detected in various human adenocarcinoma cell lines including (gastric) AGS, Kato III; (breast)
 MDA-MB436; (colon) LoVo, HT29, SW480 and LS180 (8). Since these deletions are somatic events that presumably occur as a result of exposure of these cells to certain environmental factors (11), we chose to analyse tumour cell lines which exhibit FRA3B deletions for the presence of homozygous deletion at the FRA16D locus.

STSs that were either mapped to the FRA16D region (Figure 1) or generated from partial sequence analysis through the region (data not shown) were used to screen for homozygous deletion in various tumour cell line DNAs. The STSs were duplexed with a PCR from the dystrophin locus, as an internal control. The results for the analysis of one of the FRA16D region markers, STSG-10102 is shown in figure 4. Of the seven tumour cell lines tested, the stomach tumour cell line AGS was found to be homozygously deleted at STSG-10102 and a series of contiguous markers through the region, (Table 1) thus suggesting the presence of minimal deletions spanning the FRA16D region in each chromosome 16 present in the AGS cell line.

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Detection of heterozygous deletion in AGS tumour cell line DNA

The maximal extent of heterozygous deletion in the AGS tumour cell line in the FRA16D region was determined by genotyping polymorphic markers. The markers D16S518 and D16S3029 both gave two alleles indicating proximal and distal outer limits to the deletion of either chromosome 16 in AGS cells (Figure 2A). The markers Afma336yg9 and 504CA were uninformative and therefore did not aid in delineating the limits of heterozygous deletion.

#### Discussion

- The region in which the chromosomal fragile site FRA16D is located has recently been shown to be associated with two types of chromosomal instability in cancer. In multiple myeloma, translocation of Ig loci into the 16q23 region causes the dysregulation of the c-MAF proto-oncogene on the affected allele. While these breakpoints are spread over at least 500kb they bracket both the c-MAF gene and the FRA16D fragile site (1 and figure 1). The dysregulated expression results in elevated c-MAF mRNA levels, which is thought to contribute to neoplasia. These translocations were not identified by conventional cytogenetic analysis. Their detected frequency in multiple myeloma cell lines suggests an incidence of ~25%.
- 30 Using representational difference analysis to identify differences between the genomes of normal and tumour cells, the FRA16D region has also been shown to be the site of homozygous deletion in three different types (lung, ovary and colon) of adenocarcinoma (29). The commonly deleted region includes FRA16D, with the minimal deletion in colon tumour cell line corresponding almost exactly to the ~200kb region shown by our FISH studies to span the FRA16D fragile site. If common aphidicolin fragile sites confer susceptibility to mutagen induced DNA instability in cancer then tumour cell lines which have been shown to have such instability at one fragile site are likely to exhibit instability at another fragile site. By analysing tumour cell lines with known FRA3B deletions, we have found that the AGS cell line derived

from a stomach cancer exhibits homozygous deletion spanning *FRA16D*. Heterozygosity of the flanking markers D16S518 and D16S3029 indicates that the chromosome 16 deletions are confined to the immediate vicinity of *FRA16D*.

5 Taken together these deletion data confirm the hypothesis that *FRA16D* is associated with specific chromosomal instability in cancer.

Given that the observed deletions are homozygous they are therefore likely to represent the loss of a negative function (eg tumour suppressor) rather than the gain of a tumour promoting function. If the analogy with the FRA3B locus holds then a gene either spanning or, at least partially, within the FRA16D commonly deleted region may contribute to neoplasia as a consequence of quantitative and/or qualitative effects of the deletion. Alternatively, the proximity of the FRA16D deletions to the c-MAF gene suggests that they have the potential to affect c-MAF expression. The FRA3B fragile site is associated with a region of 'late' replication (48) as are the 'rare' fragile sites FRAXA and FRAXE (49,50). Assuming that replication timing is affected by proximity to fragile site loci and, given the coupling of replication with transcription, the deletion of the FRA16D region may lead to an alteration in the timing, with respect to the cell cycle, of the expression of genes in the area - including c-MAF.

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ABBREVIATIONS BAC, bacterial artificial chromosome; DAPI, 4',6-diamindino-2-phenylindole; FISH, fluorescence *in situ* hybridisation; FITC, fluorescein isothiocyanate; LOH, loss of heterozygosity; FHIT, fragile histidine triad; FRA, fragile site locus; PCR, polymerase chain reaction; STS, sequenced tagged site; YAC, yeast artificial chromosome

EXAMPLE 2 - DNA SEQUENCING OF THE FRA16D FRAGILE SITE AND THE FOR16D GENE.

#### 30 Materials and Methods

Large scale sequencing of FRA16D included

- a) Sonication libraries and
- b) Nebulization libraries of BAC clones 325M3 and 353B15 and
- c) Restriction fragments of Lambda clones
- 35 (for sequencing between BAC325M3 and BAC353B15)

#### a) Construction of sonication libraries:

10μg of each BAC DNA were sonicated for 20 seconds using the Ultrasonic Inc. Heat Systems Sonicator (50% duty, 3.5 power).

Blunt ends were created with 40 U of Mung Bean Nucleases at 30 °C for 25 minutes.

The products were size fractioned on an 1% Agarose gel and fragments ranging from 1.9-0.8 kb were extracted from the gel with the Qiaquick Gel Extraction Kit.

1500 ng of sonicated DNA were ligated into pUC-Sma plasmid vector and cloned into

- 5 Sure cells (electroporation-competent, Stratagene).
  - 600/1500 clones of the sonication libraries of BAC 325M3/353B15 respectively were gridded on 96 well plates and sequenced in one direction using the M13-forward primer.
- Sequences were assembled into contigs in the gap4-program on an UNIX computer. For a selected number of clones sequences with the M13-reverse primer were also retrieved and assembled. Restriction maps of the contigs were compared to physical mapping data. Rearranging and editing of the sequence was undertaken with the "LaserGene" computer program.
- Numerous primers were designed and PCR-products sequenced to close gaps between contigs.
  - b) Construction of nebulization libraries:

10 µg of each BAC DNA were nebulized at 10psi for 45 seconds.

- Size-fractioning and cloning was done as described above.
   300/500 clones of BAC 325M3/353B15 respectively were sequenced as described above and included in the assemblies.
- Subclones for sequencing of BAC353B15 were picked randomly, whereas BAC325M3 subclones were selected after specific hybridisation experiments.
  - c) Subcloning of restriction fragments of selected  $\lambda$ -clones was done in pUC19-vector. Clones were sequenced with M13-forward+reverse primers as well as with specific primers.

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The Nucleic Acid Sequence (FOR16D)

The inventors have prepared a DNA sequence for the FRA16D fragile site and the minimal overlapping region of homozygous deletion in adenocarcinomas of the lung, colon, stomach and ovary and in doing so have discovered a gene located at

35 chromosome 16q23.2 and determined its DNA sequence.

An overview of the sequence data can be seen in Figures 6 and 7. An approximate restriction enzyme map is shown in figure 7c was prepared for the YAC My801B6.

Sequence for FRA16D was obtained primarily from BAC 353B15. The DNA sequence of FRA16D is presented in figure 16. This is approximately 270kb long and is bounded at both ends by an exon (termed exon 4 and exon 5 respectively).

5 The exons were compared with ESTs in the GENBANK data base and two EST clusters were identified. These are indicated as I and II respectively in Figure 7. Both of these are splice variants of the one gene. Further sequence data for contigs #208 and contig #779 was obtained from BAC 325M3 to identify two further exons 2 and 3 respectively. The DNA sequence of contigs #208 and contig #779 are presented in 10 figures 15 and 16 respectively. Homologies for the unlocalised DNA was searched for again in the same database and this identified a further EST cluster, termed ESTIII which. The EST's with homologies are again listed in figure 7. DNA sequence information of the BAC 009280 identified a further exon which was termed exon z. The remainder of the unlocalised portion of the EST cluster was termed exon a. A 15 further exon was identified on searching through EST databases for homologies with exon a to identify a yet further EST cluster ESTIV which is a combination of exons a and w.

The sequence defining the FRA16D site is flanked by two exons of the FOR16DI gene with no other detected transcript within this intron. In addition, the breakpoints of three out of five 16q23.2 translocations associated with multiple myeloma (Chesi et al 1998) map within the alternate splice of this FRA16D intron, that is between exons 4 and x.

DNA sequence for each of the exons was compiled by a comparison of the EST clusters against each other as well as against chromosomal sequence. These are set out in Figure 15.

The position of exons a, 1, z, w 6 and x have only been approximately mapped on the basis of their presence on certain subclones (containing localised markers within 16q23) as judged by hybridisation experiments.

Composite DNA transcript sequences have been prepared of the EST clusters and putative DNA sequences for four variants of the gene FOR16D (I, II, III and IV) have been compiled and are presented respectively in figures 9, 10, 11, and 12.

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The predicted amino acid sequence are presented in figures 13A to D. These amino acid sequences where compared with amino acid sequences stored on the Swissprot amino acid sequence database using the program BLAST (Altschul et al (1997) Nucleic Acids Res. 25:3389-3402). Two significant group of homologies were found. A first

of the homologies is identified in FOR16DIV relative to a protein related to DNA replication (HumanPeptidyl-prolyl cis tran isomerase and three other proteins. As can be seen the string LPPGWEERT appears highly conserved. This string lies within exon A and implicates that exon as having a role in DNA replication or Chromosomal division. This is compatible with the FOR16D being associated with tumourigenesis in that one group of proteins having an association with cancer fall into this group. This amino acid string and the DNA sequence encoding may also be very useful for identifying other cancer associated genes.

Another group of homologies that were found are further downstream for the FOR16DI gene these provide or several relatively strong homologies in several different amino acid strings for some oxidoreductase genes. These strings include VVVVTGANSGIG, MTLDLALLRSVQ, PLDVLVCNAA and VNHLGHFYL. There is a potential that FOR16D has an oxidoreductase activity. Association of oxidoreductase activity with a protein associated with DNA replication or chromosomal division has to date not been published.

# The RNA Transcript

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The estimated size of the major alternatively spliced transcript, as determined by

Northern blotting (Figure 8) using a portion of exon 3 as probe, is about 2400 nucleotides and most likely corresponds to the transcript of FOR16DII, there is a smaller transcript which is about 1.6kb and this is most likely to correspond to transcript I. A similar experiment has been conducted where the probe is selected from exon x and the 2.4 kb transcript is seen again, supporting the view that the 2.4kb transcript is the FOR16DI transcript.

For the purposes of working the invention a large number of references to pertinent methodologies are set forth in the following US patent documents:- US 5981218 to Rio et al, US 5928884 to Croce et al, US 5945522 to Cohen et al, and US 5837492 to Tavtigian et al. These documents are incorporated herein entirely specifically for purposes of permitting working of the invention.

For the purposes of this specification the word "comprising" means "including but not limited to", and the word "comprises" has a corresponding meaning.

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- 45 Dated this 16th day of December 1999

WOMEN'S AND CHILDREN'S HOSPITAL By their Patent Attorneys, A. P. T. Patent and Trade Mark Attorneys

Figure 1: Positional cloning of FRA16D and location of loss of heterozygosity and translocation in cancer

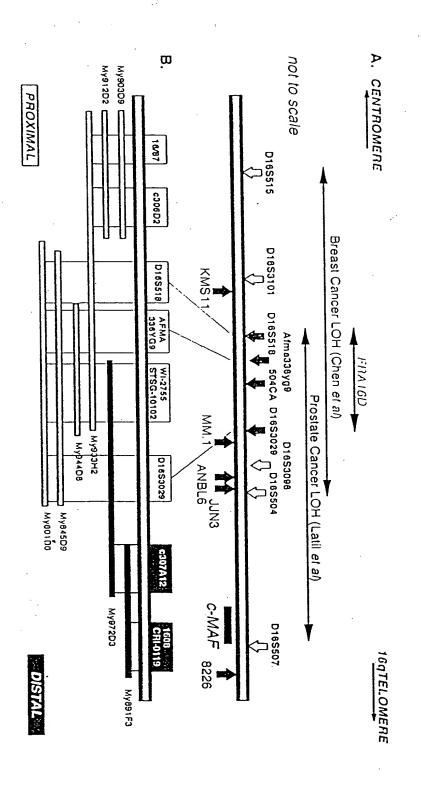
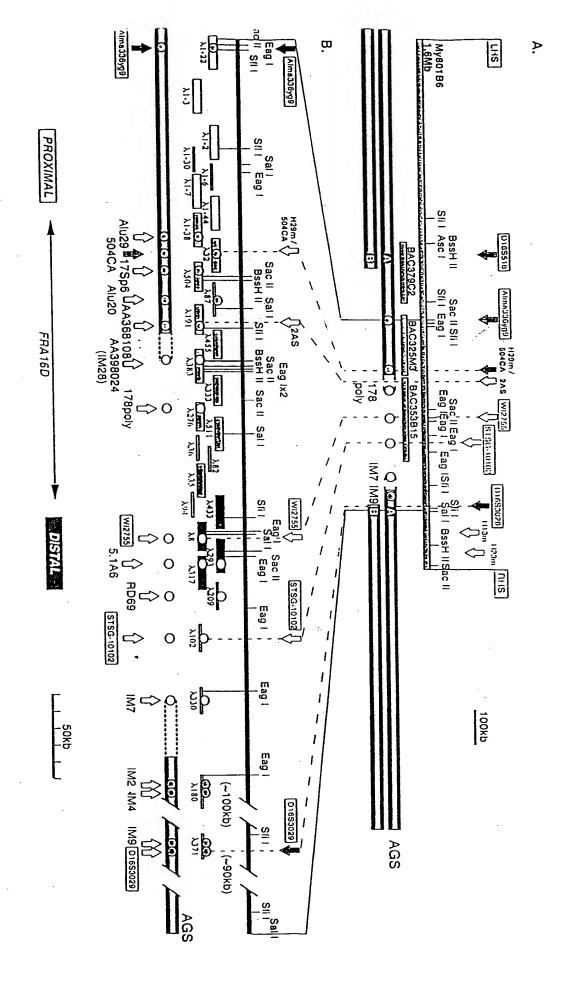


Figure 2: Positional cloning of FRA16D and the extent of heterozygous and homozygous deletion in the AGS tumour cell line.



C

Figure 3: Fluorescence in situ hybridisation (FISH) of lambda subclones against FRA16D expressing chromosomes

Figure 4: Fluorescence in situ hybridisation of lambda subclone contig to FRA16D

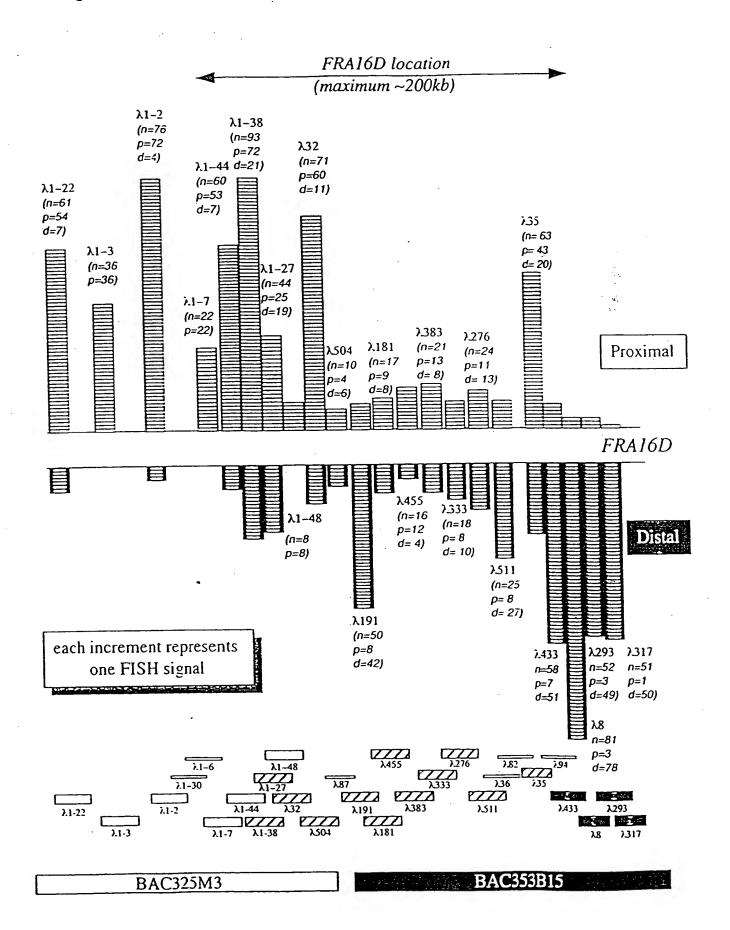
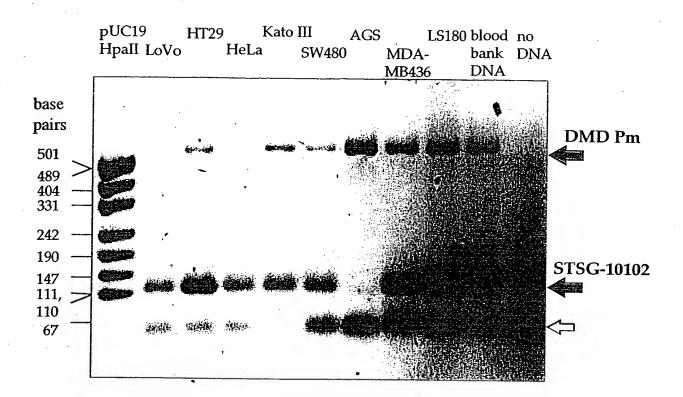


Figure 5: Duplex PCR deletion detection at the FRA16D locus in tumour cell lines



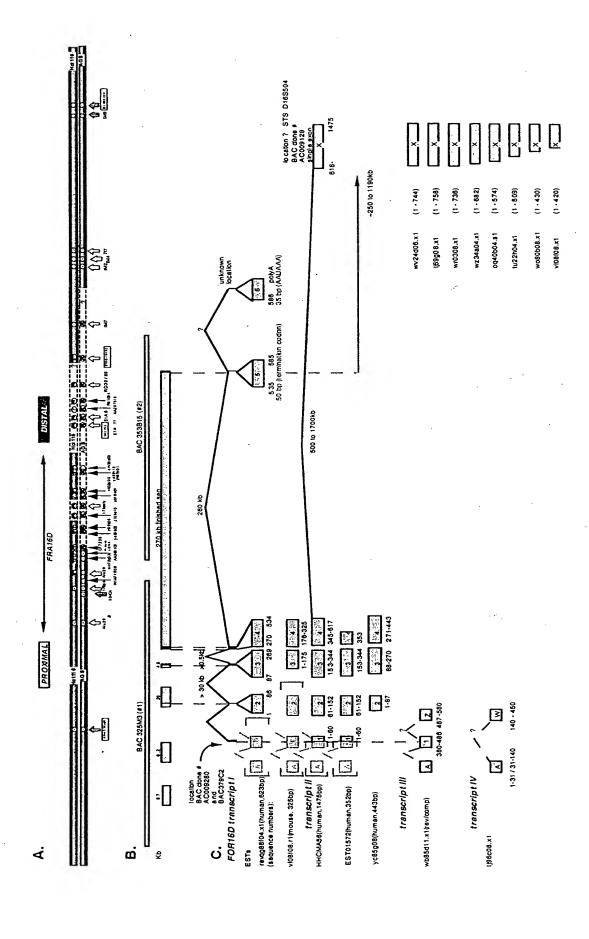
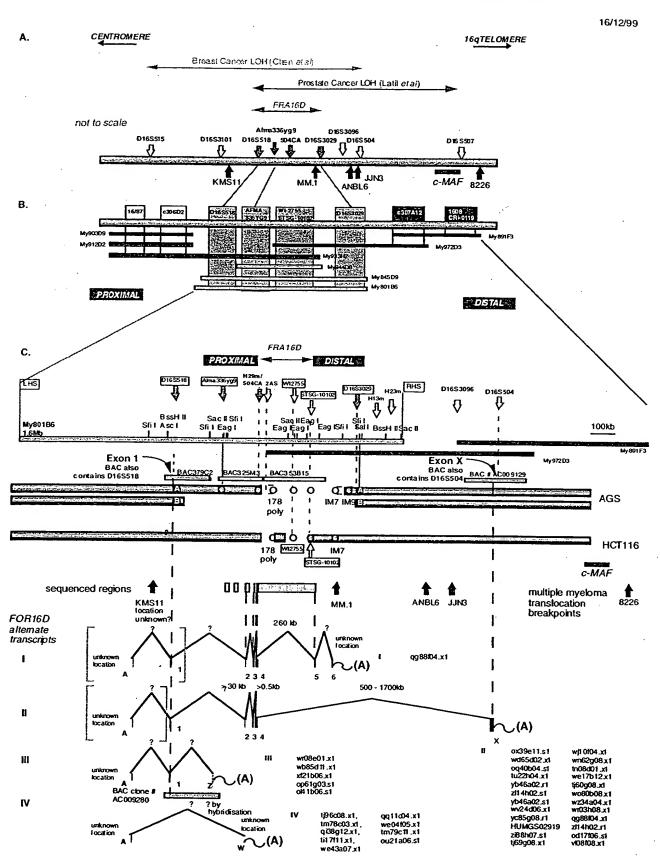
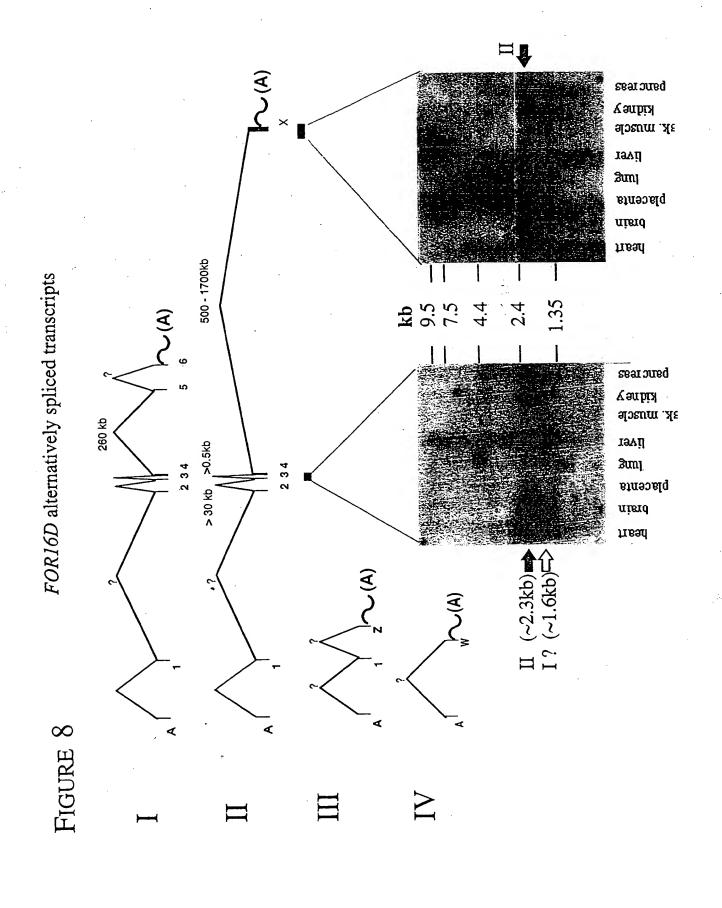


Figure 7: Map of FOR16D alternate transcript swith respect to FRA16D and common homozygous deletion





### FIGURE 9

# Composite FOR16DI transcript

tj96c08.x1, wb85d11.x1, HHCMA56, qg88f04

GCGTAGGGggccaggtgcctccacagtcagccATGgcagcgctgcgctacccggggctg <u>qacgacacggacagtgaggacgagctgctccggggctgggaggagagaaccacaaaggac</u> ggctgggtttactacgccaatcacacgaggagaagactcagtgggaacatccaaaaact <u>ggaaaaagaaacgagtggcaggagatttgccatacggatgggaacaagaaactgatgag</u> aacggacaagtgttttttgttgaccatataaataaaagaaccacctacttggacccaaga ctggcgtttactgtggatgataatccgaccaagccaaccacccggcaaagatacgacggc agcaccactgccatggaaattctccagggccgggatttcactggcaaagtggttgtggtc actggagctaattcaggaatagggttcgaaaccgccaagtcttttgccctccatggtgca catgtgatcttggcctgcaggaacatggcaagggcgagtgaagcagtgtcacgcatttta <u>gaagaatggatcttggcctgcaggaacatggcaagggcgagtgaagcagtgtcacgcatt</u> ttagaagaatggcatagggccaaggtagaaacaatgaccctggacctcgctctgctccgt agcgtgcagcattntgctgaagcattcaaggccaagaatgtgcctcttcatgtgcttgtq tgcaacgcagcaacttttgctctacccggagtctcacaaagatggcctggagacaccttc caagtgaatcatctggggcacttctaccttgtccagctcctccaggatgttttgtgccgc teageteetgeeegtgteattgtggteteeteagagteeeategatttaeagatattaae gactccttgggaaaactggacttcagtcgcctctctccaacaaaaacgactattgggcg atgctggcttataacaggtccaagctctgcaacatcctcttctccaacgagctgcaccgt cgcctctccccacgcggggtcacgtcgaacgcagtgcatcctggaaatatgatgtactcc  ${\tt aacattcatcgcagctggtgtgtacacactgctgtttaccttggcgaggcctttcacc}$  ${\tt aagtccatggtttcagactgcctggtagaaggaggtcacttctgattgtcagtgactttg}$ agctgagtgctgaaataaaatgataaacaagtcaaaaa

# Composite FOR16DII transcript

tj96c08.x1, wb85d11.x1, HHCMA56

GCGTAGGGGggccaggtgcctccacagtcagccATGgcagcgctgcgctacgcggggctg gacgacacggacagtgaggacgagctgctccgggggctgggaggagagaaccacaaaggac ggctgggtttactacgccaatcacaccgaggagaagactcagtgggaacatccaaaaact ggaaaaagaaacgagtggcaggagatttgccatacggatgggaacaagaaactgatgag aacggacaagtgttttttgttgaccatataaataaagaaccacctacttggacccaaga ctggcgtttactgtggatgataatccgaccaagccaaccacccggcaaagatacgacggc agcaccactgccatggaaattctccagggccgggatttcactggcaaagtggttgtggtc actggagctaattcaggaatagggttcgaaaccgccaagtcttttgccctccatggtgca catgtgatcttggcctgcaggaacatggcaagggcgagtgaagcagtgtcacgcatttta gaagaatggatcttggcctgcaggaacatggcaagggcgagtgaagcagtgtcacgcatt tragaagaatggcataaagccaaggtagaagcaatgaccctggacctcgctctgctccgt agcgtgcagcattttgctgaagcattcaaggccaagaatgtgcctcttcatgtgcttgtg tgcaacgcagcaacttttgctctaccctggagtctcaccaaagatggcctggagaccacc tttcaagtgaatcatctggggcacttctaccttgtccagctcctcccagggatgttttgt gccgctcagctcctgcccgtgtcattgtggtctcctcagagtcccatcgalltacagala traacgactccrtgggaaaacrggacttcagtcgcctctctccaacaaaaaacgacratt <u>gggcgatgctggcttataacaggtccaagctctgcaacatcctcttctccaacgagctgc</u> <u>gtactccaacattcatcgcagctggtgggtgtacacactgctgtttaccttggcgaggcc</u> tttcaccaagtccatgcaacaggagctgccaccaccgtgtactgtgctgctgtcccaga actggagggtctaggagggatgtacttcaacaactgctgccgctgcatgcctcaccaga agctcagagcgaagagacggcccggaccctgtgggcctcagcgagaggctgatccaagaa cgcttggcagccagtccggctaagtggagctcagagcggatgggcacacaccccgccct gtgtgtgtccctcacgcaagtgccaggctgggccccttccaaatgtccctccaacacag atccgcaagagtaaaggaaataagagcattcacaacagagtgaaaaatcttaagtaccaa tgggaagcagggaattcctggggtaaagtatcacttttctggggctggcctaggcatagg tctctttgctttctggtggtggcctgtttgaaagtaaaacctggttcgcgtgtaggttc cgtatctccctggagaagcaccagcaattctctttcttttactgttatagaatagcctga ggtccctcgtccatccagctaccaccaccaccaccactgcagccaggggcttct cctacttagggaagaaaagcaagtgttcactgctccttgctgcattgatccaggagata attgtttcattcatcctgaccaagactgagccagcttagcaactgctgggagacaaatc tcagaaccttgtcccagccagtgaggatgacagtgacacccagagggagtagaatacgca gaactaccaggtggcaaagtacttgtcatagactcctttgctaatgctatacaaaaaatt ctttagagattataacaaatttttcaaatcattccttagatacc

## Composite FOR16DIII transcript

ti96c08.x1, wb85d11.x1

# Composite FOR16D transcript IV

[tj96c08.x1, tm78c03.x1, qi38g12.x1]

amino acid sequence of FOR 16DI

[ qi38g12.x1, wb85d11.x1 and HHCMA56 and qg88f04]

[MAALRYAGLD1 [DTDSEDEL DRGWEERTTKDGWVYYANHTEEKTQWEHPKTGKRKRVAG DLPYGWEQETDENGQVFFVDHINKRTTYLDPRLAFTVDDNPTKPTTRQRYDGSTTAMEIL QGRDFTGKVVVVTGANSGIGFETAKSFALHGAHV] [ILACRNMARASEAVSRILEEWHK] /RAKVETMTLDLALLRSVQHXAEAFKAKNVPLHVLVCNAATFALPGVSQRWPGDTFQVNH LGHFYLVQLLQDVLCRSAPARVIVVSSESHRFTDINDSLGKLDFSRLSPTKNDYWAMLAY NRSKLCNILFSNELHRRLSPRGVTSNAVHPGNMMYSNIHRSWWVYTLLFTLARPFTKSMV SDCLVEGGHF

#### FIGURE 13 B

## amino acid sequence of FOR16DII

[qi38g12.x1 wb85d11.x1 overlap and HHCMA56]

[MAALRYAGLD] [DTDSEDELLRGWEERTTKDGWVYYANHTEEKTQWEHPKTGKRKRVAG DLPYGWEQETDENGQVFFVDHINKRTTYLDPRLAFTVDDNPTKPTTRQRYDGSTTAMEIL QGRDFTGKVVVVTGANSGIGFETAKSFALHGAHV] ILACRNMARASEAVSRILEEWHKAK VEAMTLDLALLRSVQHFAEAFKAKNVPLHVLVCNAATFALPWSLTKDGLETTFQVNHLGH FYLVQLLPGMFCAAQLLPVSLWSPQSPIDLQILTTPWENWTSVASLQCKTTIGRCWLITG PSSATSSSPTSCTVASPTRGHVERSDRSWKYDVLQHSSQLVGVHTAVYLGEAFHQVHATG SCHHRVLCCCPRTGGSRRDVLQQLLPLHALTRSSERRDGPDPVGLSEPLIQERLAASPAK WSSERMGTHTRPVCVPSRKCQAGPLPNVPPTQIRKSKGNKSIHNRVKNLKYQWEAGNSWG KVSLFWGWARHRSLCFLVVACLKVKTWLACRFRISLEKHQQFSSFYCYEIA

#### FIGURE 13 C

## amino acid sequence of FOR16DIII

[combination of qi38g12.x1 and wb85d11.x1]

[MAALRYAGLD] DTDSEDELERGWEERTTKDGWVYYANHTEEKTQWEHPKTGKRKRVAGD LPYGWEQETDENGQVFFVDHINKRTTYLDPRLAFTVDDNPTKPTTRQRYDGSTTAMEILQ GRDFTGKVVVVTGANSGIGFETAKSFALHGAHVILACRNMARASEAVSRILEEWKTKYHP PPEKCRIKIFP

#### FIGURE 13 D

# complete amino acid sequence of FOR16DIV

 $\begin{array}{ll} \mathsf{MAALRYAGLDDTDSEDELPPGWEERTPRTAGFTTPSKGAAVGPRTHLGPCTAH} \\ \mathsf{GRHLRGEDAHSSAARAVQSESNC} & \mathsf{TTK} \end{array}$ 

5

# Amino acid homology sequence motifs

FOR16DIV has a conserved motif possibly connected to DNA replication sp Q13526 PINI Human Peptidyl-prolyl cis trans isomerase NIMA interacting 1

22

15	EDELPPGWEERTPRTAG	31	
4	: :::::: : : : : EEKLPPGWEKRMSRSSG	20 .	
sp P46935 NED4 Mouse NEDD 4			
12	TDSEDELPPGWEERT	26	
524	TDSNDLGELPPGWEERT	540	
sp P46934 NED4 human NEDD-4 Protein (KIAA0093)			
9	LDDTDSEDELPPGWEERT	26	
524	LDTSNDLGPLPPGWEERT	540	
sp P54353 DOD DROME DODO Protein.			
16	DELPPGWEERTPRTAGFT :::::::::::	33	

EQLPDGWEKRTSRSTGMS

# FOR16DI has homologies with amino acid sequences of oxidoreductase enzymes

sp P13	6653 PCR Horvu Protocholorphyllide reductase precusor	
126	VVVVTGANSGIGFETAKSFALHGA-HVILACRNMARASE	
76	:::+:::+::: ::+::: +::: +::: +::: +:::	
201	MTLDLALLRSVQHXAEAFKAKNVPLHVLVCNAA : :::: : ::+ +::+ +:: ::::::	
129	MHLDLASLDSVRQFVDAFRRAEMPLDVLVCNAA	
251	~ ~ ~	
183	::::::::: +:: +:: :+++::: + VNHLGHFLLARLLMEDLQKSDYPSRRMVIVGSIT	
sp p35320 OxiR STRLI Probably oxidoreductase		
127	VVTGANSGIGFETAKSFALHGAHVILACRN	
2	:::: ::+: :: ++ : :: : +: :+ VVTGGASGLGAETVRALAAAGAEVTIATRH	
203	•	
62	:::+ + :: ::++ :: +:: ::: LDLSDVASVDSFARAWRGPLDILVANAGIMALP	
252	NHLGHFYLVQLLQDVLCRSAPARVIVVSSESHRFT::::::::::::::::::::::::::::::::::::	
111	NYLGHFALATGLHAALRDAGSARIVVVSSGAHLGT	

#### DNA sequence of exons

#### Exon A

ggccaggtgcctccacagtcagccatggcagcgctgcgctacgcgggctggacgacacg gacacggacagtgaggacgagctgctccggggctgggaggagagaaccacaaaggacggc tgggtttactacgccaatcacaccgaggagaagactcagtgggaacatccaaaaactgga aaaagaaaacgagtggcaggagatttgccatacggatgggaacaagaaactgatgagaac ggacaagtgttttttgttgaccatataaataaaagaaccacctacttggacccaagactg gcgtttactgtggatgataatccgaccaagccaaccacccggcaaagatacgacggcagc accactgccatggaaattctccagggccgggatttcactggcaaagtggttgtggtcact ggagctaattcagga

#### Exon 1

atagggttcgaaaccgccaagtcttttgccctccatggtgcacatgtgatcttggcctgc aggaacatggcaagggcgagtgaagcagtgtcacgcattttagaagaatgg

#### Exon Z

#### Exon W

#### Exon 2

cataaagccaaggtagaagcaatgaccctggacctcgctctgctccgtagcgtgcagcat tttgctgaagcattcaaggccaagaatg

#### Exon 3

gcctcttcatgtgcttgtgtgcaacgcagcaacttttgctctacccggagtctcacaaag atggcctggagacaccttccaagtgaatcatctggggcacttctaccttgtccagctcct ccaggatgttttgtgccgctcagctcctgcccgtgtcattgtggtctcctcagagtcccatcg

#### Exon 4,

#### Exon 5,

gtttcagactgcctggtagaaggaggtcacttctgattgtcagtgactttg

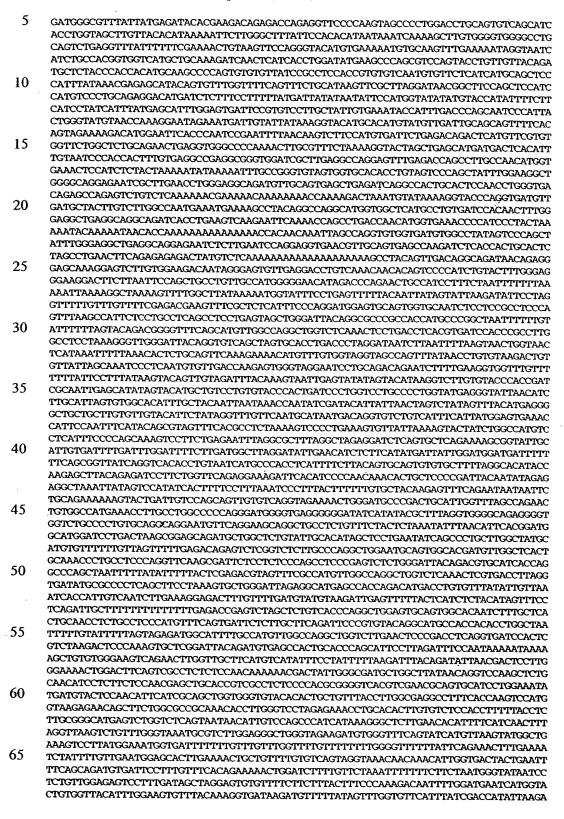
#### Exon 6

agctgagtgctgaaataaaatgataaacaagtcaaaaa

#### Exon X

 ${\tt aagtacttgtcatagactcctttgctaatgctatacaaaaaattctttagagattataac} \\ {\tt aaatttttcaaatcattccttagatacc}$ 

# BAC #2 - finished sequence (270kb)



CGGGGTAATTCTGCCCTTGAATAACCCGCTGCAGGGTGATTTATAGTTGTACAATTTAAAACGTAATGAAGGAGATAATA GATGTTGATTTGTTCCTGAAATTAGTATTTTAGAAAAATACTTCTCCCCTTTCCATCTTTAAATACCTGCAGCTGACTA CACTATAGATACTATCAAGGGCAAAGCCCCCTGTTTGAATGTGTATTGGTACATTGGTGTATCACATACAAGGCAGAGGG TGTATAAAACAGGCTTTCTGCTGCGAGGGGGAAATATGGTTTTCAAAGTGGAAATTTCATTGTATTCTTCATGAATCTAA ACATTTTGAGACTCCTGAGTGAGGTTTGAATTTTCTGGTTGCCTTTCTCTTGCCAGTCCAGATATGTTAGAAAACTGGAC TCTCAGGACCCCTCTGTGGTTGGACCACACTGGCGCTTTCCTGCAGTTGTCTAACAGAAGGACCTGGTAGCTGGCTT GTCCTCTTACACCACTGAGGCCACCTTCTTGCAGGAAGAAACATACTTCTTCCTGCCCTGGATTAACATTACCATTGGTT 10 TGAAATCATTTGACATTTCTGAGGTTAATTTTCTACATCAGTTTAGCTGCTTTAGGCCGCAAGTTATTAACACCCACTTA AAGGTGGCTGAAATAATAGAGGTPTTGCTTCCCATGTATCCAGAGTTGCTGAGGCCAGCGAGGGTTGTTTTGGCTACTAT ATTTGATAAGGTCTGAAGGCACAGATGGGAGGGATGAGGCTCCTCATTGCATGCCTTTTTTCCTTTTATCAAGAGACAGAGC ATTCTGCTTCAGAACTGTCCTCCTGAGTTGACTTCCCGTCAGATCCCACTGGTTGGGACTGAGTCATCTTGTTATCCT 15 AGTTATAAAGGAGACTAGAAAAGTGCATAACTGGCTTTTTGAGCCTCTAGAGTGGCAGCGGAACTCTGATTTTGAGGAAA AAGGATAGGGTAATGGTGTGACACAGGCACTGTTGAATACGTATGTACATATTTTAATAGTTTTCTCATTAATCAAATG GAAATGCTATCGATTTTATAGGATCGTTGTGAGAAGAAGTGAGAATTGAAATGAAAGGCATCTAGTCTTCCCCGGTCCCC GCCTAGAATACTCCTCCTCCACTCTTAATTTCTACCCATCCTGCAAAACTCAGTCTGAACAGCACACGTCAAGGAAGCAG 20 TTTTGGTCTCTAGATTATATGAAGCTCTCCAATATGTTCTTTCAGAACAGCCAGTGCCTAGAATACTGCCTGACTCGTA GTAGCACTCCTTATGTGTTGAATGAGTAAATGAAGAGTCCCTGGAATTTCTTCTTCATAACATTGAACACAACTGCAGTT GTGGCACAATCCCGGCTCACTGCAACCTCCGCGCCTCCCCAGTTCAAGCAATTCTCCTGCCTCAGCCTCCCAAGTAGCTG  ${\tt GGATTACAAGCACCGACCCAAACCCAGCTAATTTATATTTTTTAGTAGAAGCGGGTTTCAACATGTTGGCCAGGCTCAGGCTCAGGCCTAGGCCCAGGCCTCAGGCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCAGGCCTCA$ 25 GGTCTCAAACTCCTGACCTCAGGTGATCCACCTGCCTTGGCCTTCCAAAGTGTGGTGGGATTCCAGGCATGAGCCACTGT AATSCAGTGGTGCAATCTTGGCTACTGCAGCCTCCGCCTCCAAGTTCAAGCGATTCTCCTGTGTCAGCCTCCTGAGTAGC TCGTCTCAAACCTCCCTCAGCCTCCCAAAGTGCTGGGATTACAGATGTGAGCCACTCCAGCCTGTAGTTTCTTATT 30 TAATGTCTGTCCCCCCTTCTCTTGACAGTGGTGTTTTTGCCTTCACACTACTGTATCCCTGGTCCATACCGTAAATGTTC TGTAAATGTTTGTAAATGAATACATGAAAGATGACCAGGTGCTGAATCAGTGAGAGTCCTTAATGTACTTCTTATCATTT CACACAGCAGCCCCCAAGGTCCCCCAGGCTCATGGTCAAATGACATGTAAGGGACGTATCCAGCGGTGTGGGTATGTTT GGAGGGAATGAATGTAAGGAGAGAGAGGGGGAGGCCACAGGAGAGACAGGATGAGCTTTAGAGGTAGACAGCTCTCCGGGTCC 35 AGCCCTAGCTCTCCCATTCTAACTCTTGGGCAAGGTTCAAAACCTGATTAAGATTCATGCATAAAACTGAGATGTTAG AACTACCTCATGGGCTTGTCTTGAGAATTAAAGACGTTATGAACTTAAGGCCTCTACAGTGTGCTGAGATGCTTAAGAAAT GTTAACTACTATTGTTATTGGCTTGCAGTAGAAATTAAAGATTATGAATGTTCAGCATTCAGAATATACTAGATACTCAA TAACCATTATTGCTCATTATTAACATTATTTTCCCCAGCTTTACTGAGGTATGAGTGACAAAAATTTCATATATGCGC ATGAGTGTGTGTGTGTGTGTGTGTGTGTGGGCGGCATGGTGGCTCTTGCCTATAATCCTAACAGTTGAGGAGG 40  $\tt CCAAGCTGGGAGGATGACCTGGGAGTTGGAGCTGCAGTGAGCTATGATGGTGCCCCTGCACTCCATCCTGGGT$ GACATAGTGAGACCCTATCTCTAAAGGAAAAAAAAAATTATATGTATTCGTGGTGTGAAATGTGTTTTGATATTCAT  ${\tt AAGAACATTGAAAGTCTCAGCAATTTTCAAGTATAATAACTAGTTATTATTACTATCGTTAACTGTATTCACC}$ ATGCTGTACAATAGATCTCCAGAATGTATTCATTCTGTCTAACTGAAACTTAGGATCCTTTGACCACTATCTCCCCATTT 45 ATCACCCCTCCCACTACCACCACCCCCTCCTGGGAACTGCCCTCTACTCTCTGCTGTGAGTTTGACTGCTT TTGAACATAAAAACCTCATATGGGCCAGGCACAGTGGCTCATACCTGAAATCCCAGCACTTTGGGAGGCTGAGGCGGATG 50 TGGCTGGCTGTCATGGCTGATGCCTGTAATCCCAGCACTTTGGGAGGCCGAGCCGGGCGAATCACGAGGTCAGGAG ATTGAGACCATCCTAGCTAACATGGTGAAACCCTGTCTCTACCAAAAATACAAAAAATTAGCCAGGCGTGGTGGTGGGG CCCGTCGTGGCTGCCTGTAGTCCCAGCTACTCAGAGGCTAAGGCAGGAGAATGGCGTGAACCCGGGAGGTGGAGGTTGC AGCCTGTGTGTGGCTGTCTATTGTCCCAGCTACTTGGGAGCCTGAGACATGAAAATCACATGAACCTGGGAGGT 55 AAAAACCCAAAACTATATGTGCAAGCCTCAGGAACCACTAAGACAGATTACACAATGCTCATCAGAACTCAGCAGGCTTC CACAGTGCAGATTTAAGCCCTCCAGTTGCCTGTTTTACTGGCACCAAGAACACACCTTAGCTTGGAGGAAACATTGGCC ACTITCTTGTTAAAAACAAAGAGGGAAACTAGATCTGCCTTTGTGAGCCTGGAGCACCTCATCAATGTATTTTTTCTG CCTTGCTTTATAGTGTTTTTAAATCCGCCTCGGCCTTTGTTCCTGAATGAGCACCCGAGAAGGGGAGAAAGTGACTATCTG 60 GCCTTAGTATGACAAATTATTTAATGAACATTTAACCAAGATTTGCAATTCCCCTAGTTTTATCTTCCCGGTTTCC TTTCTTCTGTGTGCCCGTTGGCATTTTGGTAATGTGCTGCCTCTTTATAACTCTTTGTAGCTCTTTTATTACTTTTCTT TTTTCTTTTAGTTTTGTGGTGCCTTCTTTGATCCTCCCCTCTTTCAGTTTCCTCTCCAATTTCATACTTATTTCCAG TGATTTTTGGCTGCAACGCAGTTTAGATATTGGAGGCCAGCGTGATTAAACCGAGGCCAAGAGTTTGTATTGCCCCATGA CGATGTTTCTGGAATGTTTCTTCTGTGAACAGTGATTTTTGTATAACTCACTGGACATGTTGATTTTTTCCCTGTGACGTG 65 TAAGGTAATGTTTTCCTAGCAAAAACAAAGAGGGCTGAAACCTGGTGCTCAGAATCGTTTGGAAACGGAACTCCTCTCCC TCTTCTTTTTACACCAAGATAAAGAAATACTTTGCAAATCAGCTGAGCACATGTTCCCAGCTCCGTGCCGGGCTCTGTGG TCATGGGTTTCCTTCTTTATGTCTTACTCATCTAATGTAATTTTAGAGTGTGTTCTCTTTAGATAATTGTGTGTCTCTGA GCAAATCACITATCCTCTCTGGTCCTCAGTTTTTCTTTATCTGTAAAATGAATCAGTTAACCAAGAATAGCCATCCCTTGGG TTAATAGAACAGTTTAACTTGAAAGGAAATAAAAAAAGGAGACTAACATGGGCCCACAGACATTGTATTTCATAAATTTT

TTTTCAAAACCAAAGGACTTCAAAAATGTCTTCCTATTAGTGGACACCAGTATTCCAGTTACCCAAACTTAAAAATCTAC TTGACAGAAATCACCCTTTTCCCAAACACATTTGCCTTTTTAGCGATATCACAGGCCTTCACAGTTGGACCTAGGATATTA ATAAAACAAACAAACAACAAAAAAAAAAAAAAAAAACTATTGCAGGCCTATTATCCTCCAGCTGATCTCACGACCTTTGGAAAAC 5 TTTTTTTTTTTTTGAGACGGGTCTCGCTCTGTCGCCCAGGCTGGGGTGCAGTGCCGGATCTCGGCTCACTGCAAGC TCCGCCTCCCGGGTTCACGCCATTCTCCTGCCTCAGCCTCCCAAGTAGCTGGGACTACAGGCGCCCACCACTATGCCCGG CTAATTTTTTGTATTTTTAGTAGAGACGGGGTTTCACCGTTTTAGCCGGGATGGTCTCAATCTCCTGACCTCGTGATCCG  $\tt CCCGCCTCGGCCTCCCAAAGTGCTGGGATTACAGGCGTGAGCCACCGCGCCCGGGCCTGGGGATGACTTTTAAAACCACAT$ 10 TAAACAGACATATTCCAAGAGTCGAATACTTAGGATCAGTGGCAGTGAAGTGAAAGGACCTACGGAGAATGGTGTTCCAT CATCACTITIGCTCCCGATGACTGCATAAGCGCAGCCTCTTCATGAAAGTTTCTTTGACCATGGTTATGCCTCATAAGTTTG TTGTGTCCTTCAGTTTACATGAAAAGAAGGAATATGGATCTGAACTGGGTGCCAGTGCCATTTAAATGAGGCATTTAGGA 15 ATGGGGAGAGGGGGGGGTTCTTCCTTATTTTCTGCTGGCCCAGTGCCTTCCGCTTTAACAAGCCCAGTCAACCATCATTTGTAATCTTTGGGTCTTGAGTCACTTGTATTTGATCATTGATGLGTTTTAAGGAGCTCGGTTCAGTGGCAT CAGAGAGTTCGTTTTCTCCTTCCTTACAGGTCCCTAATCAGAGGAACGGGAAGCCTTTAGAGATGAGTCTGTG ACTATGGAATTTGGTGAGGGGTGATATAACCATCCTGCCATTTGTTGTAGACTCGAATGGATGAGGAGTCATTGATAGAA 20 AATATGCTTAATAAAGTCAGACTTGAAAGTTGGCTGGTTGGACCTAACGGGAGTATCTCTAAAAAATACCAGCAAATTAA GTTGGATCGGTGACTGTATCATGATATCGGAGTGTTAGCTGTTTTGGGAGTACGTGTGCTCAGGACTTGGGCTGAGTGGA AAACCAGAGTATGGGGTTAGAAATGGAGGCAGAGGGACTACCATGTCGGGGAGGATGCACAATGAATTGGACGAAGGTTG CAACTCAGTGAGCACCGTACCTGTAGTGTCTTAGTAATAGCAGATGCCCAACCTCCATGCCTAACTCCTTTGCCTACC 25 TGAACAGGCCTCAATGCCTATAGCAAGGCAAGGCTTGGGAGAAACAAATGTCCTCTGGGAGCAGCCTTGGGTAAAAGATT AACTGCGCACTGAGCTTTAGATCCCTGAGTGAGAAAGCTGTGGGAAAATGAGTGTGTAGCTCATGAGAGGGTTTGGAGAA AAGTGGTGACATCGCAAAAATCCCAGGTTTTGTTGAAGTTGTCTGTGGAGGGGCACTCATAGAAAGGGCACTGGACGTGA 30 GGACCTCACAGCTCTCCTGCTAATGGTGCTGATGGCTAAGCTCAGCTCTTACCCTTGACCACTGGAACAACTTAGACATG TCACCAGCTTTCTGAGCCTGTCTCATTACGATGAAAATTGTGATACAGGTTAGTGTAAGGACCGACAATAATGCATATAA CATCAATAATGATGGATATAGAATTTCTGCAGTTATTATAATCTGGCTCTCCAGTATGGTAGTCGTGGGCCACATGTGGC AAAACACCACGTGTGCCAAGTGGCTGCCATACTGGAGAGCGTGGTCAAATGACATGCCTAGCTCAGTGCCTTTCGCATGG 35 GAGGTATGCAGTACTTCCTGCCACGATGGCTGTTACTCTTGTCGTTGTGAGCAGTGCCTTGGTCCCGATGATGATTCTCC  $\tt CCAAAGACTCAGGGAGAGGTITACTGGCCAGGTAGAAAGGGCGTCCAGGTGAAGGGACCCTGGTTCAGTGATCTCCAACC$ TGCACGTCTCATTTGTGAGGAAGCCGTAGGGTGTGGACTTTTCTTGTTTCTGACCTTGAGTGATTAGAAAATAGCAGCTT TTATATGTCACAAATGGACTTTAGATAAGCATGAAGATGACGAAGACTGTGGAATATGTAGCTAAGAGTCTTACTAAAAAT 40 CCTCTCTAGTGTATTTATATTTTAAGCGTTTGGTAGTACTTTTTTTAGCCATCAGCGTTCTCTATATTAGGTTGATACAG AATTCACAGGCATTCACTTTTCTTTCATAAACATTTAGGACTCTGTATTTAGGAGAGGGAATCACTGTGAATGTAGACCTC GCATTCCTTCCGTCAGGATAATGCATCAGTTTCTTGGACAAAGGGTCCATTTCTGCTATTTTGAATGCAGACATATTTTTTG 45 GATATAAGCCACGCAGTTGCATCCCATTTCTTCCGTAGGTAAAGGCTGGGTTTCTAATTGTGATTGAGAAGCTTAGCATA CCTGCCTTCATTTCTCTCTGTAGCTGGCTCCCTTAAGTATTAAACAGCAGTATTCTAATATCAACGTCCCTTTTTTATT TGCTGTGACTTGCTGTGACTACGGTGATTTTAGTTACAGTAATTAGGTCACTCTTCATGGAGTCGGCCTATTTTAAGTGC CTCTTTAAGGAATATTGTTGCAGATCAGTAATTTTACAATTGGATGTTCTTGTGCAACTTTATTAAATGTGATCTGTCTT CATTITIGGCTGCCATATAATAATCACTAATGAGAAACTCACAGGAATCAATTCTCAGCACAGCGCCCCTACTGGT GTTTGTTTCTTCCTCCCTTCAATTTATGGTGAAATAAAAATCACAGATAAACTTGGAAAGTGAGTTATTTTTAAGTGTCG 55 TTCTAAAAAAGATGCAATATACTTCAAATAGCTGCTTCTAAAATATGTTAAAGGAAACTAACATTTGCTGAGTACTTTCT AATAATGAAGTCACATCATACGTGCATTACATGTTTATTTTCTTGACTCTAGAGCATTCTTTTTATGCAGTTAAATTACTC TAAAATGTTTTGCACCTGCACGCATTAATGTGTATTGTTTGGTAAGAACTTTCGAGTTGGTGAAAAAATGTATTGTATTT TAGTATCTATATTTATATATATACATATTAGTCTATGGGTTTTAATTCACAAAACCAGGTGTTGTATCTGGTGCACATAAGG GATTTTCAAGGCTAATCTTGGGTTTTTGCAGTTGTAACCATGTGTGATGACTTTAGAATCCTACCACACTTCCAAATAGA 60 GATGCAGATTGACCATTTTCCCAGATACCACGATGCTTTATGTATCAGCATATATTTTCATTAATTTCTCATAATTTCTG TTAGAATTAATTACCAAGTTCTACAATCTTAGAATTATTATCTTTATTTTGTAATTGAAAAGCACAGAAACCTCATGC AGCGTGTPCAAGAAAATGATATACCAGGCTTGTAAACTTTCACTTGCTAATTGCAGCTGCAGTTTGCTTTGTCCAATGCAC GGTAATGCCCCTGGCATCCATATCTAGTTATGCAGTTATGCTTCCTTTTTAAAATGTTTGACAGCACCTTCACTGAAATG 65 TCCCAGGTCCAAGCCGGTCCTTTGTGGACCAGTATGCAGATTTGAAGTTGAGCACTGTCACTTGCCTCTTAGGAGTGTTT TTAGGGAACTGCATTTTCAAATCATTTTACATTAAAAAATGGCTTACGTTTATGGAACTTCTGCGACGATCGGGTTACGT TGCTGGTCCTGTTGCAAAGTTATAAATTATAACTAGAAAAAGCACAAGATGTCATTCTTCTAACCTTCGTGAAAGCCAAA

GGATGAGGAGCAATICTTTTTTTTTTTTTTTTTTGAGGTGGAGTCTCACTCTGTCACCAGGCTAGAGTGCAGTGGGGGGGATC  ${\tt TCGGCTCACTGCAAACCTCTGCCTCCCGGTTCAAGCAATTCTCCTGCCTCAGACTCCCGAGTAGCTAGGACTACGGCCGAGTAGCAGGCCGAGTAGCAGGACTACGGCCGAGTAGCAGGACTACGGCCGAGTAGCAGGACTAGCAGGACTAGAGACTAGAGACTAGAGACTAGAGACTAGAGAATAGAATAG$ CGTGCCACCACCCGGCTAATTTTTTGTATTCTTAGTAGAGACGAGGTTTCACGGTGTTAGCCAGGATGGTCTCGATCT 5 AAGTGATGGGGTTGTACTTGGAATGACTGGCCTAGAAAACCCTACAGGTACCATTTAAGCTCCATAGTTCTTCTGTGTGT GTTTCGGATCCCAGGTTCCAAACCTGCACTAAAACTTGTTGCTGCATCTCACCTAATCGTGTGAGCCAGGTGAGCTC ATCTGTGAAATGCAGACCTTTCTGGACGTACCACCTCGTGGGGTGAAGGGAAAGAATGATACAGGTGTACATCAGGTA 10 TAAGCTGTCCTAGAGTCTGGATTCTTTTTATCCAGAAGCCATTCTTTCAGCCTGTGCCTTTTTTGTAAATACCATACCCCA TCTATTTCCACAAAGGATTTGGGGCATTAGGGAGGTAAAGGGGGGAATATGTTCTAGAAGAAGGGCGCCTCACCTCAGTAAA CATCTAACATAAGCCGGGTGCTTTGCTAGGGACAGAATGCTGTACAAGGTCCCTGTCCTCATGGGGACCGTATGTTGGGA 15 TTTCACTAATTCATCTTCACAGAAAGAAATAATATGATCACCTTCGGTTAGTAAACAAAACAAATAGGCAAACAGGTTTA CAGGCTGAGGTGGGCTGGATCACTTGAGGCCGGGAGTTTGAAACCAGCCTAGCTAACACGGTGAAACCCTTCTCTACTAA **AAATACAAAAATATTATCTGGGTGTGGAGCTTTCCTGTAGTCCCAGCTACTCTAGAGGCTGAAGCATGAGAATCACT** TGAACCCAGGAGGTGGAGGTTGCCATGAGCAGAGATCGTGCCACTGTACTCCAGCCTGGGTGATGGAGCAAGGCTCTGTC 20 TTATTTTGCTTCTTTTAGATCTGGAAAGACTAAGCQCAAAATAGAAATGCTAATGGTATTGATGTGTTTTTCTTCCTTTG <u>TACATACATCATACTTGAGACCATGTTCCAGAGAGTATTTTGTAACCTGTGACGCTCTTTTCAAGTCTTAGAGAGGAAGT</u> 25 GGACTAAAATCAGGAAGGCCTGGAAAGACTTGGAAGCATTTCTGTCACATCCCAGGAACTCCGTAAATGCCAGCAAGTGT TAGATTATTGTGATGATTTACTACTACTATTATTGATATTATAAATTAATATTATTATTGTTCATTATTACCTTATAAAA TTTTTTTGAGGTGGAATCTCCTGTCTCCCAGGCTGGAATGCAGTGGCATTTTCTCGGCTCACTGCAGCCTCCCGCCTCCCA 30 AGTICAAGCCATTCTCCAGTCTCAGCCTCCTCAGTGGCTGGGATTACAGGCATGTGCTACTACCCCCGGCAAACTTTTAT CCTCCCAAAGTGCTGGGATGACAGGTGTGAGCCACTGCCAATTATATACTTTATTTTAGGTGTATTATGCTGTGCCCTGTG TTCAGAAGTAAGGTPTPTAGAAAGGTPTGAGTTATTTCCTGTTTTCTGAACCAGACAGGCAGAGTATPTGATCTTACAAA 35 AATCTGGCTCAGTTCAAGTTAGCTGTGTAGCTTTGGAACGGACCCTGGACAGATGGATTTTCTAAAATTACAGAGGAAAC CATTTGCTATAAATTAGTAAATCTGTGTAAAGCTGCTTATTGCATCATCATGTAGAATTTCTACATCCTGCAGAAGTTTA AAGTGACAGGGATGGAATTGAATCTGTATTTATCAGAGGTGAAAGTATATGTGTAATTATTCAACTACACTTAGGTAAAT 40 ATCCGCATACATGCATCCCTCCCCTTAGACTCCATTGTTCCAAAAGGTAATGACAAAAAATTAGTCGGAGGCGGAAGG AAATGCAAAAGTGGACATTTACTCGAGAAAGAATAAAGAAACCATGCAGGATTCCATTTCACAAACCTCTACAGCTGTTG CTGGGGAGTCAGTGGAGGGGTACTGGAGGAAGGCAGACTTTGTTCTAAGCTACTTAGCAGCCAAGGAAAGCAGAAGAAAC TATTATTATTATTATTATTATTATGGGGTTGGGGTTCCTTGTGTCATCCAGGCTGAAGTGCAGTGCCATAGTCTCTG CTTTCTACAACGTCCACCTCCTGGGTTTAATCGATCCTCCTGCCTCAGCCTCCCAAGTAGCTGGGATTACAGGCACCCAC 45 CACTACATCCAGCTGACTTTTGTATTTTTTAGTGGAGACAGGGTTTCACCATACTGGCCCAGCTGGTCTTGAACTCCTGAC CTCAAGTGATCTGCCTCCCCTCAGCCTCCCGATGTGTTGGGGATTACAGGTGTGAACCACTGCTTCTGGCCTAGAAACTATT ATTAATAGAAGTTCTGGGACAACGGCCCTGCTCTCATTACTTGCCCCCAATCCATGCAATGAAATACTGGCCTGTGAGTA TGTGGTCCCTTCAGCTCATTTTCTGAAGCTGACCAAAGGAGCACAGTAATGCATAACGGGGGAGTAAAATTCCTCAAGAC 50 GGTTAATACAATGCACATTCATTATTTTATAGCCTTTGTAGATTAGGAACCAGCCATTGCTTTAGCTGGACCATCTGCTTT AGAGTCTCACAGGCTGCATTCAAGGTGTCCACTGGGCTCGGGTCAACTTCTTACCGACAAAGCTGCTGCCCCAAAAGAAT GGGGTCTTATCCTGTTGGGTGTCATGAAGCCAACACACAAAACCGAAAGTAGTGTCAAGCAGTACAGGCTTTATTCAATG GCCATGGAATTGAGAAGCAGGAGCATGGCTCACAAATTCACAAATCAGCTTCTCCACTAATGAGGGGTGGGGAAGTTAAA ATATAGACTTTGTTGGTGCTGTTTTAATGAAGAGGCTGGACATTAAAATCAAGGGGAAGAATAATCATGTCTTCTCT 55 GGTGATTGTCAACTGTCTTGGCGCTGGTGAGGGGGCTGTTTAGCATGGAAATAGGATTATAATGACACCTGAGGTCTTTT TGAAGTCCTTGGGTCGGCTATCTTGCTTCTAACAAATCTCAGCTGGTCTGGTTACAGAGGGAACTTTTTATCACAGGTGT CCTGTTTCTTAAAGATAAGCAGTGTTATTACAGGGTAGAAATTCACCTATGTCAAGTAGGCATTATACCAGGTAACAATC 60 GAAGGCTTCCTTTCCTGCCTGGTGTTTCGTTCCTTGCCACGTAGGGATCTCCATCATGGCTGCCTGGCTTTATCGAAGCAT GTAAGCCAAGAAGGAAATAGAATCCATTGGTAAAATGAAAGTCACAGTTCTTTGTAATGTAACCACGGAAGTGACGTCTT ACTICTTTTGCCATATTCTTTTTGTTAGAAGGAAATCACTGAGTCTGATCGTTGTTAAAGGGGAAAGGATTTCACAGTGG TATGAATCCTGAGAGGCAGGGGTGATCAGGGCCAGCTACCACACTCTACAACTTGAATTTTGTTTTTAGATTTCAGTCCCT 65  ${\tt TATTACGGATAAGITTGTCTTTTCTTCGTTCTTTTTCTGTTTGCATCCTTTTCGTCATCCTTTTCTTCCCTCTTTCTGGAC$ TGAGAGAGCACCAAATGCACCCATTTAAAACATATATGCATTTCTGCTTTCTGATGGGAGGTAAGATTTAGTCATTTAA TAAGAAAGCTTATGAAAAGAATAAACAAACTGGTAGATAATGTATCCTAAAGTCAAGTATTTCCTTTCATGTTGCTTTAG TAGAAGGGCCCCTTGTTAATCGATGGCCCAAATTGTCTTTCTCAAGAAATGTGTATTGCAGAATTTTGGTTAACA AAAACTAGCCAGAAAGCGTGAACTTTTTTTTTTTTTTTAGCCATAAAGCTIGGTAAGGCTAGCCAATCATTTCAAAGCCTG

TAAAGCCAACCATGTTAAAAATGTATAATAAAGTATCTAATTTAGCAAAATTCAAATTTCCCCTATGAAATATCAAGCTC TTTTTATGCTTCTTCACATGGCACCTTGTGTAGAATTTGAACCACTTTAAACATTGCATCCTTGAGTTGCATATGATGGG ATCTCTTGAATCATTTACATTTTGAAAAAAGAAGTTGAAATTTTCTTTAAGAAGCCAAAGTACTCCACGAGAATGTATG GTGTTTGTTCAGCTTGATATCTTTATTTATTTGAAGGTACTGAGAGAGCAATCTTTTCTGACTGCTCAAAACAGGGAATA ATAAACAGTCAGAGTGTCCAAGTAATCTGAGCTAGAAAGTTCCTTCTTTCAGAGAAAAGTTATAAAAAGTATTTTTGCCG GATCCAAAAAAATACTGTGTATCAACTCCTGAGACCTGCATAATGTTTTCTTAGTATTCTCACTCTTTAAAAGAAAAAA 10 ATAAGAAGATGCTTAAAAGAAAACATTATATTTCAAAAGAATTAGGTTCTGAAATATACCCAATAATGAAAACAATACAA 15 TATTGCATCTTCCGATGTCACATTATCTCATTGCCAAGCTAAAGGCTCTGTTGGGTTCTTAGTTGAACCCAGAGTGGAGG CCGATTTCATCCAAAGCCATTTTTTTTAAAATTAGAAATTAAACTCACCTTTGGCAAGTCCTCCTGACCAGGGATGGGTC CTCATGTTAGTCTGTAATGTGAAGATATGAAATGTATTTGATACAATAGGAGATTCACTGTGATTTTCACTGAATGAGTA CCAACATGGTGGGATGGGGAGGAGCTGAGAAGAGCATATTTGGCTGAGTTŢGGTTGCAGAAGGATGCAATGTGAGGTAGC 20 TGCTGGCCAGCCACATTACCTCCTTGGGCTTTGGATTTTCTTTTTCACTGTAAAATGGGGAAAGTAGCTCCCACATCTTT CCCCTCTTCGTCGCACGCTCTCCACCACCACCTCAAACCTTTCGTCTATACTCGATACTAAACCAATCCTACTTCTTCTTC GTGTGCTACCAGTTAGAATGAATTTTGCTGACATCTTACTGGTTTCTGAGGGTATACAGACACTTATTGTCAAAGATATT ATTGATTATCTGATCCCCAAACATATGGAGTTACATCACAGCAGGTGAGAAATACCCTTCAACTCTTGATTCTAAGGAAA 25 ATCCTTGGGGAGCCGCCATCATTCCTTCCAGGAAGGAATGAAATTATAACGTAATGTATTGTTGGAGCCCTTAGTTCAAC TTCACCTTGTTCTCTGCATGTTCTTTCTTTAAGTCATGTTAGATCCCTTTTTTGGAAGCAGGTCAAATTTGAATTAATAA AATGATTTATGTTGGAGTACAGGCATATCCCACAGAATCTCTTAATACCAGGCCAAAAGTAACTTTATCTTGATCTGTAG TTCGGACATATTTCTTGGATTGTCCGCACTCATAAAAAGAGATTGCGTAACACCCTTTGAACAAATGGATATTTGAGAAC 30 TGTTGCCCAGGCTGGAGTGCAGTGGCGGATCTTGGCTCATTGCAACCTCTGACTCCCAGGTTCAAGGGACTCTCTTGCCT CAGCCTCCCGAGTAGCTGGGACTGTAGGCATGCACTACCACACCTGGCTAATTATTATGTTTTTAATAGAGACTAGGTTT 35 CAGGCATGAACCACTGTGCCTAGCCTTAATAAATACGTATTTATGTCTTTCGATCTTTTTCTGGTTTTCTACATTCCGTT GCCCAGGCTAAAGTACCATGTCAAGATTATGGCTCATTGCAGCCTTATGAGCCCTCACCTTTTCTTGGCTTAAGTGATCT TCCTTTTTCAGCCTCCCGAGTAGTTTGGATTACAGGCACCTGCCTTCATGCCTGGATAATTTTTTGTATTTTTTGTGAAGA 40  $\tt CGGGTITCATCATGTTGGCCAGGCTGCAGCTATTTATATCTTATATGTGTATTTGTAAAAAATTTATTCCTCAGCCCTGT$ GTGGTAGCTCACTTCTGTAATCCTAGCACTTTGGGAGGCTGAGGTGGGAGGATTACCTAAGGTCAGGAGTTTGATAATAG CCTGGCCAATATGGTGAGACCCTGTCTGTACTAAAAGTACAGAAATTAGTTGGGCATGGTAGCCGTGCCTGTAATCCCAG 45 AAAGACAACATGAGCTAGCGGTAGAAATGCGAATGGACGCTTGTAGACAGTAAGGACTCAATACGTGGGTTTGTTCAAGT TATATTCTCCAGACAGGCATATGCAGTTAGAAAATCTGTCTAGGGTAGGGAGAGATAAAACCAGCTACTTCAGCCCTGCT ATTTTTATCCTGAAGATTTTTTTTTTTACTCTGTTTATGAATAAAACATTTTAATCAGTGCTGTATCAACACTGATCAATT TTTTTCATGGAAGTGTAATACAGGGTGAATTCCATTAAGTCAATTAAATACTTAGATCCAGTTTTTAAACAGAGCGAAGA 50 GTTTCTGTACATGCCAAGTTTTACAGCTTTTTGTATCATGAGTTTTCTTTTGCATCAATTATTTCTACCAAGTCCAACTT  $\tt GTAGATTGGGCAGATTTCACCACACCTGGTTTTTGTTGTCATTGAGTTTTTGTGATGGGGTGATTTCAGTGAGA$ AGTATTCTAGAGTTTCTCGTTTCTTGAGGATTGGTCTCCGGGCATACTCCTAATCTAATTGTTTCCCAAACTTTCAATGT TTTGGATGACTTTGGAAGCCTTGATTTCTGTAGGCTGTAGCAGACAAATTCTGATGGACAGATCAAGATGTTCTATGTT 55 GCTCTAAAACAGCATCTCTCAAACTTTTTTGGACCACTATCTAAGTTTTTTCTGTTAAAACCCAATACATTTATACTTAT TTTGTTTTTGAGACAGAATTTCACTTTTGTTGCCCAGGCTGCAGTGCAATGGCACGATCTCTGCTGACCCCAAGCTCCGC TTCCCAGGATCAAGCGATTCTCCTGCCTCAGCCTCTTGAGTAGCTGGGATTACAGGCATGCGCCACCATACCTGGGGAAT 60 GACCCAGTTTCAATACCAACTGTTGCTTTCACCACCCACTATTGGTTTCACCACCCGGTAGATCACAGTCTGTTCTTTG  ${\tt GCAGTCACTGCCCCAATACTGTTTGATGTCCTCCCCTCTGATAAATGTTCATTGAGTGCCCCACATGTCAGGTACTGACT}$ TAAGGCATAGCAAATGCAAAAATGAGCAAGGTGTTCTCTTGGCTCTATGGGTGCCTACCTTAGAAGGATGGAGATGGGAA TAAAGTTGCAGAACAGAGATGACGTCTTTACTGAGACTTGAATGATGTGTCGGAGGCAAACATGTTGACACAAACGAGAG AATTTTAGGTTCTCTTTGTAGCTGTGGCTGGGCTGGGACAAGGACGATGGACAAAGTTATGGGGGTGCTAAAAACCTCAG TAATGAAGATAAATGATATTCTAATCTAATATTTTAAAAAATCGAGGCTAGGTGGTGGTGGCTCATGCCTGTGATTCCAGC ATTTTGGGAGGCCAAGGTGGACGGATCACCAGAGTTCAGGAGTTTGAGACCAGCCTGGCCAAAATGGTGAAAATGCCATCT

CTACTAAAAACACAAAAATTAGCTGGGTGTGTGGTAGTGTGTGCCTGTAGTCCCAGCTACTCTGGATGCTGAGGCACGAG AATTGCTTGAACCTGGGAGTAGGAGGCTGCAGTAAGCTGAGATCATGCCACTGCACTCCAGCCTGGGTTAACAGAGCAAG ACTCTGTCTCAAAAAAAAAAAAAAAAAAAAAAAAATTCCAAATTGATCCAAAAAATTGATGATAACATTTCAAAAATTTAAA TCAAGACAAATTCAATATTATAGCAAAGGTTCAAGTAATGAACATGAATTTGTAATGATGCCTGGGGGAGGTGAAGGTTA 5 AAAAAAAAAAAGCCCACCAAGGACCTCATGTTAAAGTTGATGATGACGGAAGTGAGCAGTGATGATGAGATTTAAAAA ACTAACTTTTATTTTTACATTATTTTAACTAGTATTTGTGTTAACATTATTTTAATCTCCTGTGCACTTAAGGGAGCTGG CATAGGCCGGCAGTGGCTATAGGCCAGGACCTGTGCTATGTAGCTTATCTCATTCTCATGCTGATTCTACTTTTTGTTACT ACCGAAGGAGCTTAGAGGGAATCAGTGACGTGGACAAGGCTATGTAACTAAAGGGGGTGGAGGAGGATTCAAGCCCCTTG 10 GTTGACCACTTAGAAATGTCACGAGTGTCTGTGAATAGTGTTGGGGGCTGAGAGGCAAGAGAAAATAGTCCTAATGT TGTACAAGTAGCAATGGAAACAAACTTGTTAAAAAAAATTTAATTTTGTTTATGCATGTGCATAAACAAAGCAATAGA AAATATTTGATATTTAAGATTGAGCACTTAACAAAATACTTTGTCTCTTTTTGGTTTGCTGTCTTAAGCAATAGCCTTAA 15 GGTATGTAGTTCATTTTTATAAAAAATTTAAAAATTCTGAATCTGTGGTGTTTCTGAAACATCCTGATATATTTTTTTGT TGATGACTCTTAACAAAGGATGTAAGACAGATTCTAAGAAGAGAAAAGGTAGAATATCCACATGTCTCAGTTTCATAATA TGTGTAAAAATTATCATGCCCATTCATTATTTAAAGTGCTGTGGCTTTTTAGTGAATACCAACATTAACAAACCATGTTA ACATGATTTAAAATATGTAATGAAATTTGCAATGCATCAGATGATGGAACTTATCAAATTAGTTCACGTGGCGTTGGCTGA TCACCCTTATGAAGAGTTACTTGCATTGTTTGAAGAGGGAAGATGCACATCCCCTTGTGGGCTGGCAGCATTTTTTGCTAA 20 CACTGCCTTAAATGATGCTACTGGCAGGATGGTTAATTTGATGTTGAAATGTCACACAATATGTGCCCACCCTACGATTT CCTPTTTGTTTGTTTCTGTTGTCTTCATTAATAGACCTTTCAGGAACCTTCCTGGGATCTCAGATAACAGTTCTTCTG 25 TGCACCAACCAGGTATTGCTTCGTGTCTTCCACGTACGTCCTGAGAAAGCGAAGGTGAATTTCACCAATTGGTAGGTGGA AACAGCCGTTTTTATAAGACTCTGCATTTACAACATTTGTGGGGGCTGCAGAGGACGCACATGAAAATAACATGAACTGG TCGTGTGCGTGGCTCATGCCTGTAATCCCAGCACTTTGGGAGGCCGAGGCAGGTGGATCACCTGAGGTCAGGAGTTCGA GACCAGCTTGGCCAACATGGTGAAACCTCATCTCTACTAAAAATACAAAAATTATAGCTGGGGGTGGTGGTGGCGGGCCTG 30 TAGTCCCAGCTACTTGGGAGGCTGAGGCAGGAGAATGGCCTGATCCCGGGAGGCGGAGCTTTCAGTGAGCCAAGATCGCC GCCACTGCAGCCTGGGTGACAAAAAAAAACTTTACCTGGGCTTAGTAAGTTGCCTGACTTCTCATCCTGGAGTT  ${\tt CGGATCCCCTIGTTTCTAGAAGAGAAATCCCTCAGATGTGAAGGTGTGTTCCATGATTTTGTCGAACTTGCCCTACATACCTCGATGTTGCCCTACATACCTCGATGTTGCCCTACATACCTCGATGTTGCCCTACATACCTCGATGTTGCCCTACATACCTCGATGTTGCCCTACATACCTCGATGTTGCCCTACATACCTCGATGTTGCCCTACATACCTCGATGTTGCCCTACATACCTCGATGTTGCCCTACATACCTCGATGTTGCCCTACATACCTCGATGTTGCCATGATTTTGTCGAACTTTGCCCTACATACCTCACATACCTCGATGTTGCCATGATGTTGCCATGATGTTGCCATGATTTTGTCGAACTTTGCCCTTACATACCTCACATACATACCTCACATACATACCTCACAT$ 35 TTTTGATACAGGGTCTTACTGTGTTATTCAGGCTAGAGTACAGTGGCGTGATCACAGCTCACTGCAGTCTTGACCTCCCA GGCTCAAGCAATCCTCTGGCCTCAGCCTCCCAAGTAGCTGGGACTATTGGCAATGCCACCATGTTCGGCTAATGTTTTTA TCTCACAAAGTGCTGGGATTACAGGTACAAGCCACCATGTCAGGCCATTGGTATACCATTGTTTTTCTTAAACATTTATT 40 TATTITCTTATATITACAGCATATGTGGTCATTTAAAATTATTITATAGCATATAAAAGTAAAAAGAATATAAATTAATT TCCAACAATATTCATTCTCTGTGTCACCTCAGCATTTAATTTACTTCCGTCACAAAACTACTTGAAGTTGTCCCAGGCTA 45 GTTGGTCCTATTAATTACAACCTAGAGGGATTCTATTAGTAAACTAATGGATTACAGTACCTAAATGGAAGCCAGCAGAT GACTITGGAAGGACTGATCCGCAAGGGCCTTCTGTGTGAAGATTAAATGAAGCTTCCTTTTAGCCTTCTCAGGTGGCCACA ACTGTCGTAAGTTCACACTGAAAGAGAGTGGTGTAATGCCCTTTTCACCAGGCTCCAAGAAATTTGCCTATTTTATGTTT TAACGGACATGGTATCCCCAGCATTTTTAATAATGCCCTTTTCTTGCATAAGTAACTGGATATTTCCGAGTGGCCTACA 50 AAGGTCATGCGGTATCTGCCATTTTTGCATATTCTTGCTTTCATGTTTTTCCTTAAACTCTGTGCACATGAATATTTTG TGGTATATGGCTTAATTGTAAGCGATCAGGCATCAATGGCTTTTTATGAGGCAAAATCTACTTTCTGCATTTTCGGTGTGC CATTATTATAGATTGCTGATGTTTGCCAATGGATATTCTTGGAAGTCGTCTTCTGGTTTAAATGCAGTTAAGTATTTAAA AATAATACCAGTGACATGTTTGCATTTACATTCAGCCTGAAGGCCTACTTGATGCTGCAACTGAAAAATTGTTAGACTAG 55 ATTITATITATITTAATICTTITITGAGACAGGGTCTTAGTCTGTCACCCAGGCTGCTGCAGTGCAGTGCAATCATG GCTCACTGCAGTCTTGACCACCCTGGCTCAGGTGATCCTCCCACCTCAGCCTCCCGGGTAGTTAGGGCTACAGGCACACG CCAGCACACCCAGCTAATTTTTTGTATTATTATAGAGTTGGGTTTTTCGCCATGTTGTTCAGGCTAGTGTTGAACTCTT GGGCTCAAGCAATCCGGCCACCTTGGCCTCCCAAAGTGCTGGGATTCCAGGCATGAGCCACTGTGCGTGGGATCACAAAA NGCCTTCCCCTCCCCTCCCCTCCCCACCCTAAAGAGTCTCGCTCTTTTCCCCAGGCTGGAGTGCAGTGGCACTAT 60 CTGGGCTCACTGCAACCTGTGCCTCCCGGATTCAAGAGATTCTTGTGCCTCAGCCTTCCAAGTAGCTGGTTTTGCAGGCA TGCACCACCACCAGCTAGTTTTTCTATTTTTTAGTAGAGGCGGAGTTTCACCAAGTTGGCCAGGTTGTTCTCAAACTA CTGACCTCTCGGCCTTGCAAAGTGCTGGGATTATAGGTACCCCGCCTGGCTGATACTTTCCTTAGTTGTTTTCAGTG TAATAACCTGTCTTCAGTCTACTTTTTGTCCTTTTCTCCTCCTCCCTGAATACTCAAGCTTCCAGTGCACAGATTT 65 GAATGACTCAGACTTGGAGGCTTGAAAGAGGGAGAACTGATGTGGCCTGTGGCAGACGTGTCCAATGACCTGCTGTGTCCT TGCTTTTGAAGAACTAAAGAGTAGACTTGACCACTTTTTTAAACATGACATTCGATCCACGTGGCATAGCAAGGATGGGAT CCACAAGATGGAGTGTTTTACGCCATCCTCCTGACCATAAATACTAAATGAATACTCTATTTCAGTTTGAGTTTTTAGT TTGCTCTGTTACGTGAGGACACATCACTTGCACCTCAGTGTGAGGTTTGAAAGTGTTTTCTGGAGAATAATTCTGAAGA AATAGGCCCTCCAGATATCAGTAGTGACAGGGGTATCAGTAATGTTGATTACTAAGTTCTTGCCACAGGTAGAAGCCATG

CTACTGCACAAGTTTCATACTTGAAGAGTGGACATCTGACACAGTGTTGGTGGTTGTTGAAGTGTATGACTTACTGTGTT GCTTTGGAAGCTTGATGCCATAACAAAAGTGCAGAATTCCATGTTTGATAACTTTCTGACTTGATGAAAAATGAATTGTGG ATACAGATTTCACTATCCATGAATTGTGGCCTTAACTTTCTCATGTACTTTACTTTAAATCAGAGAGCCCACCTGTCCAAT TCTAGCTTCTCCTGGGCATCCTGTATTTGACACAGCCCCTCCCAGCATTCTGAGTCATCGTCTGCTGCTCTTGCACTGTC 5 GAAAAAAAGAAGGCGTATTTATAGATGGTAGAGAATTCTGGGCATGAGAAACCCAGCCAAACAAGTGGAATGTGTGCA TAGGTGGGACTGCTGATCTTGTTTTATGAAAGAAATAAAGGCAAGTCAAACAGATCCTTTCGCAAGGATCCCCATGTGTG TATGTCTAACCCAGTGACAGGTAAGGCAGCCAGGAGCTGCTGTTATTTCAGTGCAAAGCTGTTTTTCACAATCACAGACAT GCACAGCTCAAAAACCCTCACAGGTCACGCCTGAATACCTTCAATGTGCCCCATGTAAAAATACACTGCAAGTCGATTGG 10 CAGITITTAATACICTATITATITTAGGGGAGGAAAATGITTITCTTTAACCACAACATTCATGCAATACCAACTGCTGG CAATGGAAGGACCCTCAACAGACCATTTTCAGCATTTTGCTACAATTAAACTCCTCTGGTTTTAGCCCTCAGGCAATTTA GTACCTTTTTACATATGCACATTATGAACTTTTGACCAGGGTCTAGCAGTCATATATTAGAATGCTGCTCTTGAAGGCAG 15 GCTTAACAAGTTCCTCTGAGTATTACAGTTGGAGTCAGTTGTGGAAAAGGTAATTTAAGCAACTTGCAGCGAGGCCATTC TAGCAGGAGCTTTCAAAGTCTGTGATTGATCTTTTATTCAGTAGCTAACGAGGGCTGTGATTCTATTAGCGCACTACAAG GCAAGAGAACAGTGATTTAATGAAGTGTCTAGTGAGCCGGCCATAGATTTATCCTGTTGTCGCTAATTTGCAGCGCACTT GCCAGCATAAAGGAAACTGCACTCCCCCTATTAAGCAGGTATTTCCTTAGTAAATTGTTGTAAGGTCAGGTACAGTT 20 ATCTGAGCAAAAGCAATGCCTTACCTCTTCAGTGTCTGCAAATGACAGCCGCCGTGCTGAGCGCTCACTGAAGTGGAACC GGGAGATCAGAGGTCCGTCTCCAAGTCGCCCTTAGCGGAGGCAGGAGCAGATGAACTGCCAAGTAGGAGTAATAGAGTCA TAATTGGTGATTAGAACTGGAAAGGTGCAATAACATCTTAATACAAACTGGCGTATGTTATAGTTACTGTCAGTTGTTGT AAACTCGTCCTGCCCCTGGACTAGTTACGCTTCCCTTGATTAGCTCTGAGAAACGAGGCAGCGGCCACTGGGGCAGCCA CATAGACAACATCTAAATTTTTGTTGCTTTCCTGGGTCTTGCCCTGTCCTTACTGTTTCCCCTTGGGCACGCTGTTCACCC 25 TGCAGGCGCAGTGACATTTATGCACACTGGCTTTGAGGCTCATTGATCTTTTGTTTTTATTTTGCCTTTGCTGAGGCAGGGG CAGGTCTTTGTTTCATGTCAGATCCGTATCCCACTGCAATTCTGTGTTACTGTAGGAGATTTGGGGTTGGCATGCCAGAG TGAAAACGCGAAAGAAATAAACAGGCAGCACTGAGGAATTATACACTTGAGCTTGGCATTTTTCTTAACGCAGGGCTAT 30 AAATTCTTACCCGATGCTTAATGAATTGCCAGGCTGGTTAAAAAGGATAACCCTTGAAACCTAGGGTGTCCAACTGCTAA TTTATATAGACTGGAGATATTTCCATGCCTCGCAGCAAAATTTTTCTTTAAATTCACAGAAGCAGCAGCTATCCAGCATT GTCCAGTTGTGTGGTAGCTGCATTATTGATAAACATGTAACTGGTCATTTGTATTGTTTTGAGTAGGATATGGCTTA TCAGGATGCATAGTAGAGAAAAATGAGATGAGGTAATGAGATCACATACACTGAAGCATCTTACGAATCTGGCACATAGT AGGTTCTCAATAAATCTTTTTTGATTCTGTGACTGTTAGAATCTGTTGGCTGATACTCTGTCATCTGGCTCTCACTCTGC 35 TCCATAAAACTTGGGTAATTCTAATGCTTACTTCATCCCAGGGCTGATGTGTGTTAGGTTAGGGTTTATGATCAAGTAAA GAGTTTAAAGAAGTGTTTTATGAGGGAGTTTTGTTTGCAAATGATCACCTGGTAATTTAAGAGGGTGAGCTAAACTTCCT CCTTTTCTAGTATGGACCTTTGGGGCTCAGGATGAGGATGTTCAATTTGTACTGCTGGTGGAGCTGCCTTTCCATTAAGT GAGTCTTTCTCCAAGGGAACAGAAGTCTTAGGTTGTTGATCTGGCGGTCAGAACCTAGGACAGGCAAGGCAGTGGGCTGT TGTAGAGGAGATGAAGCTGATCAGAGCACACCACCACCAGTGACAACCGGTCAGGACCTGGGAAGGGCTCTGACCCATTC ATCTGAGAGATGTGGCATGAGGAACACTGAGACCTAATGCTTATTGCTTAATATTGTGGACAAGGGACTCTGTGGGTTGT A GAGAGGGAAGTAGGCACAGAGGTAGAGGCAGGGAGATAATGGAGATCCTGGCCAAAAGTTAATGCTCCGTTTCTAGTAGTCCACAGAAAGCACCTTGACCAAGTGACTGAATACAAATCGTATCACAAACTACTAGGATTTCTTGGGTGCTTACCA 45 TGTGCCATATTTCCTTGAATCTTCATGACGATCCTTCAAGGGATCCTTGTTTTCTAAAGGGTAAAGGTGCAGGTTAGAGG TCTTACGTTGCCCCCACCGGTGCAGCAATTCTTCCTGGGAGGCCTCATTGTTCATATTCATAAAGGGCCCCCATTCAGTCT CCTTTTTGGAGAAATGGCCACTGCAACTCTCTGTTCTGACCTGGGGGGAAATGTTAGACCCTCAATAAGGAGAATCAGAG AAAGAAGAAATAAAACATATTACTCCATTCCCATACTTCTGTGAAGAAATACCCGAGACTGGGTAATTTATAAAGAAAAA 50 GAGATTTACTGAACTCAGTCGTTTCACCTGGCTGGGGAGGCCTCAAAATTATGGCAGAAGGCAAAGGAGGAGCAAAGGCA CATCTTACATGGCAGCAGACAAGAAAGCGTGTGCAGGGGAACTGCCCTTTATAAAATCACCAGATCTCATGAGATTTATT CACTATCAAGGGAACAGCACAGGCAGATCCCATGGCTTTGACTCAGTTACCTCCCACTGGGTCCCTACCATGACACATGG TTTCTAAGGCAGATGAATAATCCTGGTTGGAAATCATACTGATTTAGACTTAAAACCATTCAGCCTTCTTTACCATTTCT 55 GAATGTGGCCCTGAGGGAGGATTTGTCTTTTGCTATTTTCTTTTTTAAGAGATGGGGTCTTGTTGTGTTGCCCAGGCCA CTCTCCAACTCCTAAGCTCAAGCAGTCCGCCTGCATCGGCCTCCCGAAGTGCTGGGATTACAGGTGTGAGCCACCACACC CAGCCTGGGGGAGGGTTTGTTAAAGAACTGTCTGTTTTATCACATGACCACAAGTTAAAATGTTGGGCAATGTCCCTGAA TGATACCTTTTCATTAGTAACTCACATGGACCCATAATCTCTGAATTTAACATGCTTTTCAGGAATGTGTTCATATTTTC CACCTATAAAACCTGTTTTAGTAATTTACTCCCTTGTAAATGTTCCTTGGTATGTAAATTTAGCATATTTCCTTTTAATT 60 GCCCAGGTAAATAATACCCACCATCAGAGGGCACCAGTAGTGTAATCACCTTATTTTTTAAAATGTATTCTGTGTTTCAT GATTTTTTCTGAATAACTGATCTTTACAGTCTGAATTGCATTCTGTTGGGCTTGACTTATTTTTAAATTAAAAGAGACTA ACACATTAAACACTAAGAGGTCACATAGGATATTCCATTTATATAAAAATATGCAGAGTAGGCAAATTCATAAAGACAGAA 65 TCCGCCTCCCAGGTTAATGCCATTCTCCTGCCTCAGCCTTCCTAGTAGCTGGGACTATAGGTGCCCGCCACCATGCTTGG TGGTGAAACTGTTTTGGAACTAGAGGTGATAGCTCTACAACACTGTCAATGTACTAAATGACACTAAATTGTACACTTTG AAATAATTTATGTTATGTGAATTTCATCTCAGCAAAAAGAGGCTAACACATAAGGAGACATATTTTGATACATGTGGCAT

ATTAAGCTGCTGTTGTTTTTTTTAAATATTCCAGCTGCAGTGCAGTCACACCTGTAATCCCAGCACTTTGGGAGGC TGAGGTGGTTGAATCACTTGAGGTCAGGAGTTCGAGATCAGCCTGGCCAACATGGTGAAACCCTGTCTACTATAAACT CCGTCTCTACTATAAATACAAAAATTAGCCAGGCTTGGCGCTGGGTTTCTGTAATCCCAGCTACTTAGGAGGCTGAGACAGGAGAATCACTTGAACCCGAGAGGCAGAGGTTGCAGTGAGCCGATATCTCACCTCTGCACTCCAGCGTGGGCAACAGAGC CAGGAAATAATTGGGTTGTATGTAATGCCCAGTAAAGTAAACAGATCTTAGAGAGGGACACCGATCCCTACCCTGCATGG GGTTATTCACAGAGCCATGGGGACACTAAACGTACCTTATCTCTTGACCATGCTATTGATTAGTTATGTGTTTGCCTGTG TTATTAATAATGTATACATTGAAAAAATCTATGTGCATTATAGTCTTTGATCTTGTCATGAATTTCAAAGCCAAAGATTCC ATTTTCCTTCTTTTTAAAAAAAATTTTTCAAAGAGGTAGGCTGGAAGTAAATTTAAAAATTTTCCCCTTTCTGGCAGAGG 10 CTGTATATACTTGTATGCGCACATACACATATTTTAAGGAAAGAATTATAAAATGATCAATTCAAGCTTACTATATGCTA GAGGTGAGGAATATTTGAATACAAGTCTTATCTAGTAGATTAAAACAGAAATTAAAGCTGTAGACTAAGGCAGGATCAA GAATGGTCTTTTGTAAAATGACTTTGAAAACTCGGGGATAATGTCTTCATTAAGTGGAGAAAAATCTTGGGAAAAATATA 15 TAAGGAAAAAGGGGACTGAAATTAGTGCTGATAAAAGCTTGAATTAGACATTATAGCACTGAAACTTCTTTTTCTTCCTT ACTTAGAATTTGGAAGAACATACTTCATACAAAGCTATGAAGCATATTGGAAGATTTTAGGTGCCCTGTCTTCCTGGATA TAAAATGACTCCAAACTCAGTGATACTGATCACCCTGGCTTCTTTTCCACCTTTCACTTCATTGTCTTTTTGTGTGT TCTGACATCTGTTGACAAATGGGCAATCTTGGGGATGGGGGGTTCCACTGGTATATTTTTCTTTACTGTTAAGAAAGCTC 20 AAAATTCTCTCTCTCTCTTTTCCAAGCCACCAATCAAAACTGACATTTTCTAAGTGTCCTCATTGCCCTCTGGGAATGTTC ACCAGCTTCCTCTCACCTTAACCCCCACGTATTGTTGCAACGGCAAAAAAGAGAATTGCACAGGGGAACACCACCTATCA 25 GAGTTCACACTGAGTTTGCAGATTCATCCTTTTGCTTCCAGCCATCCCATGGAATGCTGTTCTTGGAAGGGTCATCTCAT GGTCCATTGTCGGCCCTCTTAGAAGAGATTTCAGGCCTTCCCTTGTAGCTTGATAGTTACAGGGAGTGCTAGGGTAAGTG ACGTTACTGCACCTGTTTTGAGCCTCAGTTTTCCTGTCTGCAAAGGAGGGATGATGGTACTTACCTCAAAGAATTGTAGTT ${\tt GGATCAAATGAGTTGGAGTGGGATACAGCAACAATCTATATTCTGATTTCAGCAACACTGTGCAGTGTAATTCCATATTA}$ 30 TATTACACCACATCTTCTGTGGGGCTTTTCTTTGGGGGAAGCTAACATTTTAAAAGGTTTCCCTTTGTAACCCTGTAACCCC 35 ACCCATCAAGATATCCACCTGTAAAATATTTAAGAACTGGTACTATGAAGACATTTCCCTTATGCAATTTGTTTTCCATC TAAGAGCAGAACAAGGAAAATATAGCTGACTATAAGTTACAAAGGCAGACTCTTAAGCTACAAAATACATCTCTTCACAG GAGCACTTGGAGAAGGCCTGAAGGCAAACCAAAAGTGAGCAACAAGGAGACTAGTGTTCTGAAACAGAGATGACAGGCTC CGCACTGAGGGTGATGATGGTGTTACGAATTACCCATTCAGTTTAAACTAGACATTCCCTGGAAGCATGTCATGGGGTGT ACATGTCTGAGTACCGCGCAGATAGTGGGGAATAGTCTATGGATTCTGCTTACACCATGGACAACCAGGCTGGGCCATGG GTTGTGTTTTTTTCCTCTCATTTTATAGAAATGTTACCAGGCATATTTTCCCTGTTTCCCTAAGAAGAGCTTCCTCTCA GTGCTAGCCAGCCACAGGGCCAAGTGACACCTAGAGGTGATCCTTTGGTTATTTGCTAAACAGATCTAAGACAAACCGAT ATCTGTAACCTGGGATTAGATAGAGCCAATAAGATGTAACTGAAATTCTCAGGGATTCTAAGACATCTACATTGTATGTT GGTACGTTATTGAAGGTGATGCTAGCTGCTATAACAAATAAGCACGCCTGTGCACAGTTGCTCAAAGATAGTAGAAGTTT 45 ATTTCTTGTTTATGTAAGATCCATAATGACTCTTGCCAATTAGCAGGCTGCTCTCTCCCAAGTGGTAACCCAGGGACTCA AGCTCTTTTCATCTTGTGGCTCAGCCGTCTGACACATGTGGCTTCCAGCACTGCCCTGCTGTTGTCTGCACAAAGCTGGT GGAAGAAGTAGGAATTTGCAGGACCATGTGTGGAGCATTTTAAGGATGAGGCCTGGGAGTGGCACAAATCTTTGAACTCC AGGAGGCTAGGAAACAGAGCATAACCTTGTGCCCAGGAAGATGCGGGGCATAGTACATCTTTGCCTCACCTGATGTATTG TTTGTTTAAAATCACTTTGGATTCTCATTTACCTTTTCCCCCTCAAGATCTTTGTTTTTGACTTTGGAGATAACCAGAAA 50 TCTTGACTTACTGAAACCTCCTCCTCCTCGATTCAAGCCATTCTCCTGCCTCAGCCTCCCAAGTAGCTGGGATTACAGGC ACGCCACCACCCTGGCTAATTTTTGTATTTTTTAGTAGAGATGGGGGTTTCACCATGTGGGCCAGGCTGGTCTTGAACTC55 ACCCCACTGCTATTGTCCAGTGTGGTAGGTACCTTTGCCTACCTTCTACTGTACAGGCTGGAACAGGTGATATTGTGCCT ACTTCACAGCCTTCCTAGCAACTGAGGATGGCTGTATGACAGATTCTAGCCATCAAGTAAAATCAGAAACCAACAGCACG GATTTGATGCTTCCAGCCTTAGCGGTPTTCTTGCTTCTAGGACTGAACAGGGAAGAGGGAAAAGTCAAAAGAATGACAGA AGGTCCTCACGTTGCAGAACACTGACCAATGTTGGCAACTACAAGACAATCAGGCGTGATTCTTCATCCAGGATCTGCTT 60 TTCCCTGTCCTGCCAATTCTTGAGCTGCTAATAAACATTCTGATGCAAACATGGAATACAGATTTCAGAGGGATTCTGGG TAGCCCTCGGAGATGAGGATGCTTTGCGAATGTAACAGGCATCTCTCACCTCATTTGTCTGGTGGAATGTTTACAAATGC TAATTAAGTTTTGCTTCAAATGGGGAACAGTCCTGTGCAGTGTTTCTAGGAAGTTTACCAGCTTCATCATAGGAAGACGTT CTCCATCGTFTGGATCTTTTTTCACCAGCACCTTTTGATTGTGGTGGTTGGGATGTGATGATCTCAGAACTTTACATCCT CCATGAAATCTCTGCAGCGATAGTTGAATGTCTTGCCTTTTCTATTATTGCCCTTTTTCTTCTGTGACTTTGTACTGAGA 65 AAGCAATAGTCCCTGAACATCATTTGGCCTGAACTAGGCTAGAGTTTCTCTTAATCAAAATAATAACGATGATTTTTCCA AATTTTTTTTTTCTATTCACCAAAATATTCCAGATAACGGTTATCAGTTTTTGATTCTACACATACTTCAAATACTATTAA TGCAAAATCCTTCTTTAGAAATGTTACCTAATTCCAATGTTTCACTTTATTCAGCGAAGACATTCCTTTGATTATTCTGG

TTAGGTGTTATGATGCCAATTTGCCCACACATTTTTTCTTAGGCGCCCTATGCTTGCAGTAGACAGAGGTTGAGGAAAGC TCAAGGTTAAAACAGGAAAAAGTAACACAGTAAATACCTATTTTTGTGCATAATTCAAATTAAAACCCCCAACCACCTAGA AGCACCTATACAAGGAACTGGCTGGCATATTGCATTCCTGTGACCTGCTGTCTTAATGATGGAATGACTAACGAGGATCA GTGGGAATGTGGTCAGCCTCTTATCTCATAAGCCAAATGCTGCATATTCCAAGCCTGTCAATTCTGAAAGCCCTTGTTCA 5 TTTTTAAATAATGAAAAACTTTGGGGCCTTGTTCATTGTTTCTAAAGGAAGACATTTAGAAAATTTAGAATATAAATTTC TGTTAGTAGAAACTAATTTCTCTTGCTTTTCTCTAAAGTATACTTGATTTGAAATATGTGCCCTGAAGTTTTGCTATGTT GAAAAAAATGATGAGCCGGGCACAGTGGCTCACGCCTGTAATCCCAGCACTTTGGAAGGCCAAGGCGGGTGGATCACCTG AGGTCAGGAGTTTGAGACCAGCCTGACCAACATGTTGAAAACCGTTTCTCTACTGAAAAATAACAAAAATTAGCCAGGAATGG TGGTACACAGCTGTAGTCCCAGCTACTTGGGAGGCTGAGGCAGGAGAATCGCTTGAACCCGGGAAGTGGAGGTTGCAGTG 10 GAATTATGTCATTTCGTTGTCACAGCGTCAGCAGAATAAATCTTAGATCAAGATGGGATTACTGCGCCACTCCCTTCTTC  $\tt CCAGTCTGTGGTTTAGCACGGGAAAAAGCAAACTAGGGCCCTTGGGCCCAAATCTGATCTGCAGCCTGTTTTTGTGCCGCC$ TGCAGGAGAACATTTTTAAATTGCTGAAAAAATATGAAAGGAAAAATATTTCAAGGTGTGAAAACTACATGAAGTTTA 15 GAGTCTCACTCTGTCACCCAGGCTAGAGTGCAGTGGTGCGTTCTCTCGCTCACTGCGGCCTGCATCTCCCACGTTCAAGCG ATTGTCCTGCCTCAGCCTCCCAAGTGGCTTGGAGTATAGACACGTGGCACCACGCCTGGGTAATTTTTGTAGTTTTAGTG GAGACAGGATTTCACCATGTTGGCCAGGCTAGTCTTGAACTCCTGACCTCAACTGATAGACCCACCTCAGCCTCCCAAAG TGCTAGGATTACAGACATGAGCCGACCTTTTTATGTATTGTTGATACAGTATGACAAGGGAAGAGTTAACTGATTGCAGC AGGTTAGAGCACAGCATGAAGAGCTGACAATATTGACCGACTGGCCCTCTCAGACAAAGTTTGCCAACACCCCAGGTGAGC 20 AGATACACTTATCTGTGAGCAGACGTGATTCAGGGGAGATTGTTGTCCCTCCTTTCCTAAGAAAATGTGGAAAGATGAGA ATGITGCCACCAGTGCTGATATGGAGCGTTTTTTTTGGAATTGTCTTAAACAAGTCCCAACCTTGACTTTGCCTGTGTAC  ${\tt CCTACTCTTTACTCCCAGGTCTTTGCAAGGTAAGCTGTCAGGTGTTAGCTGAAGATACGGCAGCCCACCAGTGGTCCCCTTTACTCTCCCAGGGCAGCCCACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCAACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCAACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCAACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCAACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCAACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCCAACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCCAACCAGTGGTCCCCCCTTTAGCTGAAGATACGGCAGCCCCAACCAGTGGTCCCCCCTTTAGCTGAAGATACGGCAGCCCCAACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCAACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCCAACCAGTGGTCCCCCTTTAGCTGAAGATACGGCAGCCCCAACCAGTGGTCCCCCCTTTAGCTGAAGATACGGCAGCCCCAACCAGTGGTCCCCCCTTTAGCTTGAAGATACGGCAGCCCCAACCAGTGGTCCCCCTTTAGCTTGAAGATACGGCAGCAGCCCCAACCAGCAGAGATACGGCAGAGATACGGCAGAGATACGGCAGAGATACGGCAGCCCCAACCAGAGATACAGA$ 25 GGAACTTCTGTTCGAAATGAATAGTCTTGAAATATGTCATAAAGTTACCTATCAGGACCACTTTTACAGAGATTTAAATG TGATAATAAGAATAAAAGAAAATGAAGTGACATTGAGGACGTCTTCTTTTATAACAGCTCTAGGTCTTGCCTGTTAAGCA CGCTGTAAAATGACTGTTACACGTTTATGGATTGAAATGGTTCTGCTGAAATTTTAAGTGTTAACATTGTTCAAATTTTTC ATTACTAACACCTCTCACATTGTTAGAAAACAGTTTTATGTTTGACATTTTGATCATACTAACCTGGGACATTTTATGCT AAAGTTCTCATTTCATGCCTTAGGAATCCCCTGCTTATTTTGATTTCAGCACCTTTCTGTAGGACGCCAATAGCTTATGT 30 TTGCACATCTTACCCCGATGCACTCTCTAAACCGATCATCACAGAAGATATTTTGTAGTGATGAAGAAAAGCTTAAATGTC TCATTTGTCAGATTGGTTTAGGTAGAAAATAAGGATTTCCACCCCCTCATCGTGGTTCCCTTTTAGATTTTCTTGTTTGC TTTTCTTTAAAGCTGCTGTTACTCAAACGACAGTCCGTAAACTGCACTTTATTTTTTATAACAGCTTTATTGAGAGATAA TTTACATGCTATACAATTCATGCATTTAAAGTGTACAATTCAATGGCTCAGTCTATTCAGAGTTGTGCCAACCATTGCCAC AGTCAGTTTTCTTACCTGAAGGAGAAAGCCTGCACCCCATATTTTTTACCTCCCATTCTCCACTTCAACTCTTCCCCAGC 35 CTCTGCGAACCGCTAGTCTGCTCTTCATCTCCATGCGTTTGTATATTCTGGACATTTCTCATTAATGGGCTCACACGATA TGTGGTTCTTTGTGAGTGGTCCTTTCACTTTGCATGCATCATGTTTTCAAGATACTGCACCTAATTTTTCAGTTCCTTGT GAGATTCATCTTTGTAGCCACCAAGAGCCACTAACAGTGCTAACATAGCCAGGCATTCTAAATGTGTTTGTCAGGTGCAT AAATCTGTGACTGATAAAACCACTGCTCATTACTTGGTTCTTAAACTCTCCCTCAATATAGCTGTAGGGACATGCAAAAC 40 AAAGGCTGGCTCATTAATAGGATATGTCTAGAGTTCTGCTTTAGAAATCATAATGTGGACATCATTGATTTCTCTGATGC TGGAAGCTGCTGCTTCTTCATCTTTATCTTCTCCTCCTGTGTATTGAGAGCAGGGACCTCCTTGTGCTGTTTTGGG CTCTCCTTGTTCACCCAGATTGGCTGCATCAGCACCTTCTTAAAATATTAGTGTTGCTGAGATAGGAGCTTTTGGTAGAT TAAGGTGGTCCTTTATAAAGTTTAGACCTATTTTAATAAGGCTGACTTGGGTTGAAGATAACTAGAGCCATGACTTTCAT 45 CTTGATGGACAATGAGTACTCACTCTACTTTTTAGTTTATATTTTTAGTTCATTTCATTTAAGACAGCGTCTGT TACCCAGGCTGGAGTGCAGTGACATCTCGGCTCACTGCAACCTACACCTTCTGGGTTCAAGTGATTCTGATGTCTCA GCCTCCCCAGTAGCTGGGATTACAGGCATGTGCCACCACACCCGGCTAATTTTATGCATTTTTAGTAGAGACGCGTTTCAC CATGITAGCCAGGCTGGTCTTGAACTCCTGAATTCAAATGATCTGCCCACCTCAACCTCCCAAAATGCTGCGATTACATT TTAAAACTCTACCTTTTAAAAATTAGAACCTGGACAAAGAGGTATTAAAGAATGTGTCTCTTATTAATTTATTATGGTAA 50 CTGTAAAATGATCACTCCCCAGTTTGACAGGAATTGCCCCTGGAATCCCATCTGGTGTTCTAATTGTTACCAAATTCAGG CAAATCTTGCCTGTGATACAGGTGGTGAAGCTACTGGATAGAACTGGAGCATCTAACTGGTGTGAGATGGTATCTCATTG TGGTTTTGATTTGCATTTCTCTGATGGCCAGTGATGATGAGCATTGTTTCATGTGTCTGTTGGCTGCATAAATGTCTTCT TTTGAGAAGTGTCTGATCATATCCTTCGCCCACTTGGGTGGATGAAGCTGGAAACCATCATTCTCAGCAAACTGTTGCAA 55 GGACAAAAAACCAAACACCGCATGTTCTCACTCATAGGTGGGAATTGAACAATGAGAACAGTTGGACACAGGAAGGGGAA GTTAATGGGTGCAGCACACCAACACACACATGTCTACATATGTAACAAACCTGCACGTTGTGCACATGTACCCTAGAAC 60 AAAGTGAAATGCATATCTCTAAGGGCTAAGTAGCCAACACAATAGGCAATTGAGATAGGAAAGACTAATTTAGAAAAGGT TTGTGTCTGCGCTTTTGTTGGTAATTAAATTAATTATTATACATTTAACACAATCTTGAATTACCAGGTGATCATCTTA GGCACTCAAAAGCATAAGAGCCCTTGAAAGCAATATCTAAGCATAGATATTCCATAGCACGTCTTACAATCTAAATATTG 65 CTTTTAGTGTAATCGAAGCAGCAAGAGTAGTCACAGCAGTTGATGGACTATTTTTCAAAATTGATTTCAAAAATGTATTTA AGGGGATGATCTTCTAGTCTAGATTACCTATTGATTTTTAATATGAAAAGCTCATTATGTAAGCAGTAACCGCATATAAA TTCTTTTTTTAAGTGTTACTGTGTAATTTGCCATGCTGTGAAGAGGCCCGTCCCAGATAAAGTGCCATTGATCCTTATTA AACCTCACCTCTGGGCTTGCTTAAAACTAACTGGAAAAATTAAAGTGTTCATGCCGCAATGCACTTATAGCTTGTGTGAT

TTAATAGTGAAATCATATCATATATATAAATCATATTTTAGCCTATAAACTGAAATGCCAATTAGGAAAGATAATATATA CTTGATGTAAAACCATGTTACGTGCCGATAATCTTTTAGCACTTTAATTTTTTAATTTTTAATTGTAGAAGGAGAGAATTATGAATT CAAGTCAAACACATTAAATGGTGGGTTTCATCCAAAAAATCTGATTCTTTTACTATGTACTGTATTAGTGGATTTATAAT ATTAGTGGGAGGAAGTATAAAAGATATGGAAAAAGATATTCTGGTTATGTTCGTGCTAAAATGTGTGTTATTAGAATTTACC AGGGGAAAGAAAATATAAAAGCTGCAATAGGTTTTTTCTATTTTTTAATACCTAACATTTGTTATTTTAAAAGCAATAAA ATCCCCTAAAGAAATATTCGTAATCAATAAGAACACAAAATATGGAATATTAACTGAGTTATAAAAAATGTTTGTAGTA TAGCACAGAATGAAAAACACAGCAAGTTATGTACGGTTTAAAGTGTAATCAATTTTGAGGTTGTATACAAGGATATACAT GATAAATACAAGTAGTAGCATTTTTAGTAAAGGCTGTTACAAAATACTGTATTTATGGCCTATTCCATTCTTTTTATAGC 10 TCATTAATGTAGAAAACAAACACAGTGTATCCATCTTCTCAGACGGTTTAAAATTCCCTTAAATGATGTTTTTAAATGTA AATAACTGAGCTCATTTGATCTGGTTCTTCCTTAAGCCAATGTTAGCATGAATGGCCATATTCACCACCCCGGGTTCCT AAGAACAAATGGCTTGGCAGCCTACTCTCTCTCTCTCGAAGCTCCATGCCCACCCTTGCTGTTGCACCCCCACCCCAAGGAA AGCCTTCCCACCTTTGGAAGCTGCATTAATTCTTCCAGGCCACAAGGGGGCCGTTGAGTTAGTGGTTCACTGCACTGGCT 15 GGCAGGAAAGAGTTITAATGCAGGCTCCAAAGGTGCTTAATTTCCTGTGGTCCTTATGAATATGCATACAGTATGTCCTC CTCTCCCCTTTCCTTGGACAAGCCCTTTCTGAATAAGCTGAATCTGTAGTATAATTTCATTAACTCATTTCCAGTATTTA ATTTGGTTTTGATATTTCCATCATCCCCTTTTCTCCTTTGATTTTGTCATTCTCTCTGTAGAAGTTGATAATCTGTATTATG 20 GTGTTTTGTTTTCTGTTTGGATTAACATATTCTCCATCACTGTGTAACTTCATCCAATACGTATTGAATACCTACT ATGTGTCTGGCACCACTTCAGACAGTAAGGATATGGATATGAATTTGTATCAGTCAAGCTTTCCAGGATCTTATTATCTA GAGAGAAAGATTAAAACATATGCAAATAATTTTGATAGAAGCAAAGACCTAACTCAGCCTGAGAGGAGGTTGGGTTTAGA GAATGCTTTCATTGTAATGTTTTAAAGCTTTTTATTATAACTATAGTTTATTTGGACTTTATGATTTACCAAGTAACTT 25 ATTITICATAGTGAAAATGGAGATAAGACATGTCCCATTCCCTAGAATAGACTGTCACTGCTCTCGTTGCCTCCAAGGAGG AAACTGTTATAGGAATGATTGACATGGAGGTTCATCTGTAGAATATGGACAGCCCTCTACAAATTGGGAACAAGGGCCAG GACACGAAATATAGTGACAGCCTCTGGCCTGGGAGTCTTAGACAGTGCTCCAAAGGCAGGATTCATGGAAGTTTTCCAAA GATAAGATTCAAGACCCAAAACTATGAATTNGAAAGCCAGGCTGAGGCTGGCACCAAGTNAGAGGCCTCCAATAATGTTG 30 AGAGAAAGGGAGTGTAAAGGNTGAGGATTCCATGGCTTTACACTCCAGAAACTCAGGCTAGCTTGTTCTCACTGAAGCAG TCATACCTTCTCGAAGGCAACTAGGTGGATTACAGAATTGTGCTGGGTCCTATGGAGNGTCAGAAATAGTGAAGCTTCTG GAGCTTCACTGTCCAATATGGTAGCCACGTGTGACTATTAAAATGTAAATTAAAATTAAAAGTTCAGTTCCTCTGA AATAGCAGCCACATTTCAAATCTTCTGTAGCCAGATGTGGTTATTGGCTACCATATTGGGTAGCACCGATATAGAACATT 35 TTCTACCATAGTAGAATGCTCTTTTGGATAGATCTGCTTTAAAGCATTAGTCCCCAAAGTGTGAAGGATGAACCAATTGG GTTCCGAGAGAAACATTATAAACTTCTGTTTATCCATTAAACTCTTTCATTTATTATTAAACATCTCAACACATTTATT GGGTGCAGGTACTGTTTTAAGTGTTTTGCATATATTTACATGTACTGTCCTTTCAAATATTCTTTGAAATAGGACTATT GTTGTCCATATTTCACAGATGAGGAAAGAGATGTGCTAAGAAAAGAGGTGGCAGAGTAGGGATTCCAGCTCAGTAGCCAC TTTCAGGGTCCCATACTTTCCAATGTAAGCATATTGGCTCTCAATTTAAAAAATGTTATTTTTTACAGATAGTACACAGAT 40 GCACTGACACAGGTACCCTCTCCAGTCCTCTGATGGTCAGGAATTGTGTGCAGTATGCAGTACATTCCAAAGTCAGGCTG GCCATTTCCCCAGGGAGAGGGTCCATGTTGGAACCTTTGCTCCTTGTGGACTTTAGCTTTGAAATGTATTGTAGTTTTTGC ATGTGTGCTTAGTTGGATGGATTGAGACATCANATTATGTGGTCTGAACTAAAGCAACCGTCACAGAATGAACAAGAGAC TTACNAACATTTGTGCAAAAAGATCAGTGTTTGGATATAGTTTCTTAGAATAGCAAATAGTAAGAAAAGAGCAGGATTGG TACTICACCTACTCCTAATAAAAGCCCTTCATCTTGTGCAAAGTAAACACAATTCACAGTTTGATCAGAAGTGGTCAATG 45 TACCATTCCTGGAGGTAGTAGCTAATAGAATGATCCAAGTTTATAATTTGTAAATAAGTAGACATCTTTTGAGGCGTATG CCCTTAATTTTCTAACTGATGAAAGCGTACTTCCATCAACTCAGGACAGTTCAAAGCAGCTTGGAGCCTCTTGGATTTT AAAAAGACTCTGTGGCCTCTGTCTCTCTGGTTTTCAGTGCTCAGCTGAGGTCTACTCTGTTTATCCTCTGCCTACTAGA 50 TCGCCTCCCACCACCCCTTAATTTAAAGGGATTTAAAATATTTTCAAGTACATCCTGATATCAGCACGTGGTACACTGAG TGTGCGCGCCTGCATGTGTACTGTGGATGTGATAAGAGCTGTGTTTGTGAAAACTGTGAAGACATAACACATATCTAT 55 TACCCAAAGATTTCGTAACTTTCTCACATCCTTGGTTAAGGCTGAGCTGCCTAGCTGTCTGCATTTCTGATAGGTTTTGC TTTCATACACATTTCAAGGACTTAAGAAATCTGTTTCTAAAGAATAACTTAGAATGTGCTTGTTATGGTCCCACCTATTC TGGGGAATAGGTGGATATTATACATTTATTTAGGTGGAATGGTGGGTCAGATGGCTTCATGTCTTTTTACATCACAGTTC CACAGCCCTCATTAGTGAAGCAGAGGTTGAAGGAGGTCACTTGCTTTTTATCCCAATGTCAAATAACTCCATAATTTTTTT 60 TTATTATTITTTGAGACAGAGTCTTOCTCTGTTGGCCAGGCTAGAGTGCAGTGGCGCGATCTTGGCTCACTGCAACCTCT GTCGATTCTCCTTCATCGGCCTCCGTAGTAGTCAGGACTACAGGCATGCACCACCATAGCTGGCTAATTTTTTGTATTTTT AGTTAGACACCGGGTTTCACCATGTTAGCCATGCTGGCCTCGAACTCCTCACTTCAGGTGATCTGACTGCCTTGGCCTCC GAAAATGCTGGGATGACAGGCGTGAGCTGCCTTGCCTAGCCAAATAACTCCATTATTTAAGAAAAATTAACCAGTATTTA TTGAATACTTACTGGGCCCTGTGCTAAGTGCTTTCCATGTGATTTCTAATTTCCTGACCATTCTATGAAGTGGCTACTAT 65 AATTATCCTGATTTCCCAGGCAGACGAAACTGAGGCTTAGAGGTTGAAGTAATCAACTGGGTGTTAAAAAGCTGGTAAG TGGCAGAGCACTTATTGGCGCTAAGACTGTTTCTCAGGACCTTGTTGTACGAGAGTCAACGATAAGACGCAGAACGTATG TTTCATTTTTCTCGGAAGGATCTATCTCACTCATCTGCCTTCCTGTGTCTAGCAAGAGGGCCCAGGCACATAAAATACAC CACTGAGATCTATGCATGTTGTGGGCCCACTTTAAGAAAAGGAGTCAAACATTTAGTGTGGAATACTGGAAGGGGTCCCT

AGACATGAAGGCCTCTTCAACCTACCTTTTGTTGGCTTCAAGGTTATGCCATATTTTTGCAAAGTCAAGTTGGAGATGGC TCTCGATATTCATGAGTGTGTTAGACTGCTTTTCTTCTATTTTTTAAAAATGCACCCAAATGTAAAAGATACTTTTACGT TTTTGATTTGAAGGTCATTTGAAAAATACTCTGTCTTTATTCTTTGAAATGGATTTACTCTCAAGAAAGTTGCA TGTCACTTTACTTGGAAGAGCGGTCTCAGGGAGGTGTGCCTCCGCTTTCATGAAAAGTCTCCCGTCTGCAGAACCATT 5 AGTTTCTTAATGGTCTTTAGCAAAGGAAGTAAGTGACGCTGATCGGTGAAGGCAGACAGTAAGATTTATAATGTATTTGT GCTAGCTGATTGCCAACAGAACCGGCCTTTCCCAGTGGTGCTGTACGCAGACTCGGAAAATCAATAGGGATTAACCTTTG AATAATGTGGCCAATCTCAAAAGATACTAATTCATTTTTTCAAATGCAGCATCGCTTGAAGCTGTGATAAAATATCAC 10 CAGCATCATGATGCAAGCATTGACTTTGCTCACAAAAACATCTTGTGGTCAACAGTGGGGGCTTAGGGGGCAGGTTTTGTG GCTGTGACAGAACACGTGGCCCCTAGTGTCTGTTGAAAGATGGGCCCCTTTCAGGAAAATTGCTTACCTTACTTTTTTA GACATAATTTTTGTTTTCTGTTAAAGGGTCAGTTATAGATAAGTATGCTCCCTTGCAATGAAATGAACCCACTTTATCAA CTTTGAAGGAATCAAAATTAACTTGAATACATTGTCTTTTTGCATATGTAGTGCTTTTGTATAAACATATGAATTTG 15 TAGGAGCTGCTCTTAATGATTACTACTGCATAGGCTGGAATAGAAGCAAAATTTGCAGTAATACACTTTTGTACCTTTCT CTTTAGGCCTTGGCATGTATTAAAGTACTATACATTTGTCTTAAAAATTGAAATTGTAGATTATTTTCATCTAAGACCCT TTTGAATTGGTCGATATACTCTGTAACTTGTTTAAGATACCCTACTGAGCTATTAGTTTAAATAATGTATCATAAATT GATTAATCATTACAGTAAGACTTATTAGCTGCATTTATATCTGCGTGTTATCCACAATTGACTTATAGTCTAATAATCAC 20 GTATACTTAAGCAGAAGTTGGGTTTTACGTTACAATTTAATAATTATCAAGGTGGCAAACGGTAGTATTTGTGTGTAGAA GTTGAGTGGATGTGGGGCTTTAAAGGCAGGAGTCTCTAAGCAGGTTCCTAATTTTACTTTTCCTAGATAAAAATAATTCTC TCTCCCAAAATGAAATACAGGAAGTGGACCAAATTGTGTCAGCCTGAAAGAAGTGATTGAGTTTGCGGAAGCTGTCCTGA AGTCGAGGTTCTGGAAGATGGGTGGGGGGGAAGCGAATGTGAAGTGCCATTGCATTTGTCTCCATTTCTGTCCCAG TTACATCAAGGCTGGGAGGAGGTCTTTCCACTGGTTTTCCGGGCTGTTTGTGTACTACACAGCCTGTGTACCTGCCAAGA 25 CACGCTCTGCCTCTGACTTCCGATGAGCTGACTAACACCTTATAGATGAAGTTCCCTTAGAACCAAAGATGCCCCA TGAAACTCCCTAGGATGAATGTTGGAAGTCCTTCCAACTGGGATTCCCAGCCGGAAAGGAAACAGTTCATCTGACTACAG GGTTTAGGTTTACATGTACTTTAAAAAAAAAAAAATTAATAAAGTTTATTTTTACAGTAATTTTAAGTTCACAGCAAAACTG AGTGGGAAGTGTAGAGTTTCATATACTCCTGTCCTCACACATGCACACGCCTCCTCTAGCTATGCACATTTTCAATGAAA  $\tt CTACATGTTCATTGAAAATGATCTTTTGGGTGGTTGATGTTCGATTTTGGCTTCTGTGTTGGGCCTGCCCAGTGAGGTCC$ 30 TTTTGACTCCCTAAGGGACCCTGTTTTGGGTTTCTTTTGAGGTTGAAGATATTTCAGATCTTTCCCCCTCAACTTCCATA GGAACCAAACTCTCTTTATTCCTCCCGTTTGGTTGGAAAGTTATTTTGCCTCACTGCGTGATTTTTCTACTGCACCAATT CCCCTTTCAAACGTTATTCCACAACATACTAAATTAATGTATACTGTGTTCTTTGGGTAATGGGGAGGGGAGCCTGTCTC ACAGCACGCATTTGTTCAGCTCTGTGTTGAAAGAGCACTGCCCGCCGCGTGAAGGACATCTGCTCACAAGTGAGCAATTG TGCTTCTGATTTGGGGCAGCACCTTTGCTTGAACGCTGGCTCCAGATGAAAGAACAGATTGCCGCGGGGCCCGCTTTTCCA 35 AGGATCCCTCTCCCCAGCATGGGGCTTCATACATTATTGAGAGCAAACCTACTTTCCACCGCCACTCCTGGATGCACTTA TTTTGCGAGCCTTATTCAGAATGTCAGCATGGATCACTTGGCAACAAAGGCCTAAAGGGCAAGCCAGGAAGCTTCCATCG ATACGITATITATGGTGTITAATTATTATTGTACAGATTTATTAAATGACTCTGTTACCTAGGAGTCCATGTAGTTGCTG AAAAGAGTTTGCTAACTTTGAATCGTAGATGTTTTATCTGAAAACAAAATTTCCTTGTGAATGCTGTTACCATATTCCTG GTGTCTATGTGGGGGGTGTGTGGTGGTATGCCGGTAAGTGTTGAACAACCTGCTCTTGTTGGCGGGAGCTAGGGGAAACA 40 AACCCTGTTTTGTAGTATTTGCTGATTACTGTGTGTAAATACTCACACCTTGGCTGATTTCAAGTTGCAGCTTGGAACT TAACCTCATGAGCATAGATAATAGTCACATCTACTAAGATTATTCAGAAGTATTGAGCTTTGAGTATCTTTTACCTTTTTT AATATAGCTTATTGAATCATACATTTATCTACTTTAATACTTAATAATGAGTGTGCCCAACAACTAGGTCTTAAAGTTCC TGATAGTYTAGCAGTGTGCTCTTAAGCCAGTCGGACCTGGTTGTTGTACACTACTGGGTGTGTTAATTGACTTCCAG 45 TTTTGTTTTGTTTTGTTTTGTTTTGTTTTGTTTTGTTTTGAAACAGTCTCACTCTGTCGCCCCAGGCTGGAGTGTA GTGGTGTGATCTCCGCTCACTGCAGCCTCTGCCTCCTGGGTTTAAGGAATTCTCTGCCTTAGCCTCCCGCGTAGCTGGGA TTACAGGTGCACGACGACGCCAGCTGATTTTTGTATTTTCAGTTGAGATAAGCGTTTACTGTCTTGGCCAGGCTGGT CATTGTCTGTCAGGTTTAAATTGCACCTTGGGTTCGGGTGAAGTTGATGATGTTTCCTAATGCAGGCTCATTCCTAACA 50 CATGTACCCTGCTTGGTACATGCCAGATGATTCTGTTGTAGTGATATTAAGGACAACAGTATTTTGCCAGAAGCTATAAC TTATCTTTTTCTCAGTTTTTTTTCCCTTTTCTTTTTTTTCTCCCCATCTTGAACATGTTGCTGTAGACAGGTGCTAGG TTTCCCTGAATGACTAAAGCAGAGATTTGGTTATTTTCTTCCCAGAAAAAGTAGATGCATCAGCAGAGTTTGAGCCCCCTGG 55 GCATTATTTCCCCAATTCCGTATCCCATCTACTAATACAAACTAATGAGATCTATTAAGGATGAGTCCACAAGTTTGAAG GGAGTCTCTTATTAATGTTCCGTCTTTGCATGGTGTTACAACAGCGGGACCATTTTACACTGAGGGTTTGCGAGAGGCAT GGCTCCCCTGTTATTTTGGGACTTACTGCAGATGCTTCCTCTGGTTCAGGGTGTTGAGGCTTCGTGCTGTTAATATT GGAAGGTGGGTCGTTTGTACTGGGCATCTGTCCTGTATCTTGGAGATGTTTAGTAACATCCCTGGCCTCTAGCCATTAGA TACCATCTCCCAGTAGGGATAATAAAAACATGTCTCCAGATGTTGGCAAATGTCTGGCCTTCTGGGGAGTAAAATGCC 60 CCCTGGTTGGAAACTAGTGTTCCAGAGCTACATTCTTAGCTGCTTACTGCATCATTGTTTTTTAGCCCTCCTTTTTCTGG CTTCCAGGAACCACCAATCCCCCAACACTAGGATAGGCCATAAGCCAACCTTATGTCACCAAATTAATGTCCGCCTAGGC AAGCTGGACTGCAGAAAGAAAAGCAGTATTTCTACCCTAGGATCATTATCCCACCTTCCCCAAGCTTCGAAAGAGGTACA GGAGTCCTCAGAAATGGGGCTTCTAAAATAAGTGGAACTGGGACCTCTTCTCTCAGGCTGTTACTTGTTGTTGTTGTTTCCA CCCTATTTTCTGAGCTGTGGAGCAGGAGAGTCTCACAGGAAACTTGGTAATGTAGATTTTGGAGGACTTGAAAGGTTC 65 CTGCTACCTTTGGCTGGGGATGGAGGGAACATGGAAGATGGGTCTTTGTTTAGAGGAAGCTCTTCATCCTGGTACCCTAG AAGTTGGCATAGTCTTAGCAGTTAGTCCAGATGTGAATTTCAGGATTATTCTGTGAATCTTCCAAGTCCTGTCTCAGCAG TGAAATAGGCTCAGTGTAGCTTATGTCTAGGTGGCTGAGTTCATTTTCTAGTCTAGGTAAAGGGCACCTCCTGTAATTGA ATTGTGTAAAACCTGCACAGTGGTACACCTGAGCCCTTTTTTAGGACCCAAGAGTGCTGAGATTGGCTCTTCCTGAGATT CCCTCTTTAAGGATAAGACTTTCTGATTTTTCAACTGGATTTACCATTGTGGCATCTGCACATGAGCAGCAGCTGACTGCTT

TTTGGCCCTACCTGGAGCCTGAGTCCTCAGGTAGCTGACCCGAGAGACCGTGGAGCTGCTTGTGATATACAATGTCAGTG CTCTGAGTCATTAGGCGTCATCTGAGACAGTGGCTGTAGGGGGAGGGGAGGGTAGGCTCTGAGTCAAGCAGACCTGGAATTT TCTTCATGGGCCATTAGGAACTGTGTGACCCTGGGGCATCTGACTTCACCTTTCTGAGTCTTAGTTTCCTTTACCTGTTGA ATAGGTCTAATGATATCATTATGGCAGATCAGTGGGACGATTGAGTCAAATAACATGCCCCAATGCCTGTTTCTCAGAGTA 5 GGCTTTCAGTGGGCCACATCTGTTGTCACTATTATTTTTGTTCTTCTGCCATTTGGGATGTGCTTTCTGATAATGGCACT AGGCTGCCTTGTTGCCTCCTGCATGTAGAACACAGAACTTCGCAGTCTCTGCAGAGTGTCTAAATCCTGCTCTGGGCCAG CCCTTTCAGAAACACTTCAGGAGATCAATAGTTATCTGCTTACCTTTCTAGCTGAGATGAGATTTTATGCTTGTTACTAG CAGATCAATAGTGAAAGCAGGTTCTGTTAAGTTTTTTATAGGAGTCATTAATCTCCCTCAGCCTCAGTTTCCCTATCTGT 10 GTTTTCATTCTCCCCTTAGCAGCTTTCAAATATGTACGTAACACAAATGTTACATGTTTGAGCATTTAAACTGAATTTGG 15 ATGGAAATGCCTGTGGGCCCTGAGCTGGCCCCTGGCATGATGCCCGTTCTGGGTTCACTGGGATGCCTCAA GGGGAGTTTGGAAACCCTCCTAACATGTCATCTGAAATCTGGGACCACAGTTCCGGCTGGAACACTTGTCACTAAAGCTG AATGTTTATATTCCACTGGGGTAAGCTCTAACAAGACCCATCATTTCCCAGATAACCAATTCTTTTTAAAAGAACATCTG TTGAAACTGGCAATTTACATTCTTCATAAAATACGGAGCGACATAATTAACCCTCTGGGGAGACTAATATTAGTTTATTA 20 TGTGGTGGCGTTGGCTTTTACTTGGGGTTGACCTTTCCTTATCAAGGACATACAAGGTGAATAGCTGGGTGÁTAATATAT GGTCCCATGATCATCAACCAAGCACCAAGAAGCCTTTTGAAGCATCAACCAAGCCTTTTGGAAGTGCACAGTATTGTTTA ACACAAATAACTCAGCGTTTAGTAACTTTCAGGTACAATCAGTCTATTTTAAAGGGACCTCATGTGTTATTCATGTAT GTGCACATGTGTTTATGCAGTTACCTTTGTCTTCATTGATTTGGACTCCTTTGGTGCTCGTAATTGGTGAAATTCTCTTG 25 TGATCATTGTTGTAGTTCCCGCAAATCTATTTACGGTTTTCACAAGGAGGTCACGAACATGCGTTGTTTTCAATGCTGGG  $\tt CTAGTITCAGACTICTGGCTTGTTGTGGGAGGAGGAGAAGAAGAAGACGGCCATTTTGATGTGGCCCAGAGACCAAATGA$ AACAAACGATCCTCTGATTGCTCAGATGTCCTCTTTGACTTGGAAAGCACCCACGTGAATGTTGAACCATTTGGCCCTCA GTTCTCCGTCCTGCAGCAACTGCATTGACTCCTGTTTTCTACACAGTGGTCTTCAGCTACACCTTACCAAGCACCCCTT ACCCAGCAAACGTGGCTTCTCTTCCCCAGGCAGAGCAGTTCGTTACTTAGACTAGGAAAATGGCTCCGAGAAGCTCACCCA 30 TCACCATTIGCTCTACTGCAAAACAGGACTCATTAGCAGGAGCTCATAAAATGAAACTGGCAGTGAGCTCATATGGAAGA TCTCCCTCTTGGCCAACTTCATGCTTCAGCCAAAGTGAACTGAGCTCACCAGGCTGAGTCATCTGTGCCAGCTGTGCCCT CTCCCCGAGGCTGCCATGCTCGTGCTTTCTTGTCTATTGGCAAAAGGCTCTCCATCCTTCAAAATCCAGCTCTTGG 35  ${\tt CCATGAGTGCTITTGTATGGTGACTGTTACAAGGTCATCTTTTCCCCTGGATGAGACGCCCCTTGGGGAAAGGAC}$  ${\tt CAAGITITIATITCCTGITTAACCTTGGCCTGACAACCTAATAGGTGCTCAGTGAACAGTTCTTGAATTTAATTCTCTCCCC}$ TYGCTGTCACCCAGGCTGGAGTGCAGTGGCAGAGTCTCTGTGCACTGCAGCCTCCGGCTTCCAGGTTCAAGTGATCCTCC TACCTCAGCCTCCTGAGTAGCTGGGACTACAGTTGTGCGCTACCACACCTGCCTACCGTGTCTTGTTTTTCAATGCAGTAT 40 TATTTGTAAGCTGGGAGATGGGACCTGAATTTGAAACCCCAGGAGAAAATAGCATATAAAGTCATTTTAAATAACTATCA TTTGCAGAGGGGGGGGCACAGATGCCTCCAGTGGCCCCAAGACTCCCCTTTACACATTGCCGTTCCCTTGCCTTCTACTC CTCTTTCATTACCCTTATCAAGATTCTGCAGCCCAGGGTGCTGCTTGTTGATGGACATCTTCACCTGACTTTCTCCCTG GTCCAGGTGCATTTTAAGCATGGAAGGTGACACTTGCCRTTCTCAATGGACAAAGGGAGTGGGGAGTGTGGGGGGTGTGCT 45 TTGGAGTTAGTCTCTGGGTTTTCGAAACTTAGCATTCTCAGATTCCCAGCCAACTGGTTTCACATGACAAGTAAATGAGC AACCTGGAAGATGAGTGGCGTTTCCACACACACGGAAGCAGATAGTTCCATTACGTGACAGTGTGTGCACAGTTTATGGA GGATGAAGCACAAAACCTGAGCCACAATGCAGTATAGGTTGGACNAAGCACTCATTCCGAAGGGGGGGTGTGTATGTGCAA ACTGTATAATTTTTTTCTTCTTTTCTTATCTGCTAGCAAAGTGGATAAGTTGACCCATGACATGGTCCACTGGAGGGACCA CATTTGTGACTCTAGCAATTAAGCTTCCNTTTTTCATCTGTGGATAAAATGACCTCCCAGTGTGCTGGAGTCAAACATAT 50 GCÁGGAGACAGTCCCTGACCCTGGGGACTAAGCCCAGGACCTGCCACTAGGAGATATTCATGGAATCACTGTTTCTCCTC CTTTTCAAAGAAGACTGAATTTATGATGAAACTTTCTTCGTATATTGGCTTTGAGAAATTCTGTTTTGGTGCTTTATGTGC TCTGGATAATTCTCAATGACTTTCAAAGTTATGATTCAGGGAGTAATTCGTTCTGAGAGAATATCCATAATCACATCAAG GTGTGTTTGTTTTCCACCATTTGTAGCCTTTTGACAAATTTCTGGGGGGCCTCATGCCTGCTAGGCCGAATACTTGTGTCC 55 AATCAGTCATGCTTAGCCATACTCCAAGTAGTCATTACTCATCTAGTCAGCATGGGAGATACTCTTTACCATC ${\tt CCGGTAAAGTGACGTITTGATGAAAACAGCATGGATCTTCCTGCAGAGAACAGACTAGCCCCCTGTACAGCACACAACTC}$ AGGGGAATTTTAGGTCTGGTGATTTACTGCTGTTGGAGCCTGGCCTTCTTCCTGGGAGAAGGCTGGAAAAACTTCAAGTC 60 TGGAAAGAAGTTCACACTGCAAGATCGACAGGCTTACCCAGTTCATTTAGGCGTGGCTCGATTAATGCACACAAAGCTT CAGAAGAGCAATTGCATTTGGTCATTCTAGTATCAACTGAGTTCTTTATAAAATATCTTTGGGGTGTTTAAGGAGAATTA TTCTTTTTACAAGTTCTGATTAATGACACCGCAAAAATGAGAATAATGAGCTAATATGTATCTAGTAATTGCACT 65 TATATGTATAGAAGCGTATAATCCACAGCACTCCTTCTGAATACGTTAAGTGAACCCCTCGCAACAGTCTTATCCC CATTGTAGAGATGAGAAAACTGAGGCATACAGAAGGGATGGAACTAGGCCCAAGAGCATAGAGGTGGAATTGTTGTGAG ACACTTCCCTACTAGGTAGAGCAATGATTCCAGAAGTTTATAATAATTGGAAAGTGTATTAGTCGATTCTCACACTGCTA 

ACTAGGGGGATGGTGATTAGAAAGCACCTCATGATCCCGTNTACTTCCTGCAGAGAACAGACTAGCCCCCCTATGCAGCAC 5 ACTGGAAGGTAAAAAGTTGGCAACCAGAGGCTTAGAGGAGGTTCAAATCTCAAAGTGATGTCTTTTCCTTTTTGCATTTTTG TCTGTGCTTTTTGAAATTTTGTTTTTGGCAGGCAACATTCCAAAGATCTTTTTCATTTAAAGTCCAGGAGTCTTCTGTGT GAACCCCACACAGGTACCTTGGAAAGACTGCATCTCCTGGATTTTGCATGGTTCTGGCTTAATGGACAACATATCAGTCA TTTTTGAGGAAAATAAATTTAAGGCTTGGTTATCGGTCCTTGAGTCAGCACACTTGAGCGTTTTGTCAATTAGCTCCTCC 10 CCCAATCTGTATGGTATGGCTTTTCCTGTAATTACAGTCAAGATCCTATAGCCGGAGGAAGGCCTGTCAATTGAGTAAGA GGCTGATGTTCATCGCACAGTGACAGCCCATTCGGAGGGTTTTAGGCCTGTCCTTAGAGAGGCTTGTTATTTCCTCTTTC GGTACTTTGTTGCAACCTAGTTCACCGCCATCAGATGAATGGAGGTTTCTTATGCTGTGGCGAAACCCAGGGGGTCAAGC CCCTCGGACATGACGTACTGCAAAGTGAGGATGTTTCATTGATTTGTATTTTAAAAATTAAAATAATTATTTAAGCTGC 15 GATAGACTCTTGCCTGTCGCCCAGGCTGCAGTGCGGTGGCATGATCTCGGCTCACTGCAACTTTTGCCTCCTAGATCAAG TATATACGGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTTGACCTCAGGTGATCTGCCCTCCTTGGCCTCCCAA 20 GTGGTGTGATCTCAGCTCACTGCAACCTCCACCTCCTGGGTTCAAGTGACTCTCTTGCCTCAACCTCCCGAGTAGCTGGG ACTACAGGCCAACGCCACGGCCACCTGGCTAATTTTTGTATTTTTAGTAGAGCCGGGGTTTCACCATGTTGGCCAGGGTGG TCTCGAACTCCTGACCTCAAATGATTCCCTGCCTCCACCTCCCAAAGTGCTGGGATTATAGGTGTGGGCCACTGTGCCCG CCCAGGAAGATGGTCATGTTTTACTTTGAAGCAATCTGTGCTTGGTTTATTTYTTTCAGTGAGTGTGGATTACGTTTATA ATTITCAGTTACTAGTTAGGTAAAGAATCAAAATTAATAAACACATTTATAGTTCTCAGAGATTCCTTGAGAGAGCAACA 25 TCTTTAAATGGATAACCACAGTCTTCTAAACACCTGAAAGGGTGTCTTTTGCTGAATTATGGAGTTTTAGTTTTGCTTTA GAATTTTTGGRTGATTAGACTTGTATTCTTTTAGGCTATTTTTCCCACCTGGTACTATTTTGGCTTTACTGAATGCCCTCA TTCCCCATACACCACCTTGTTTTGTTCAGATTCCCCTAAGTCTTCATTCTCGTCCCACCTCCCCATCACTCCTGACTACT TCAAGCATATGTTTGCAGTCATCACTGATGTTCTGCCTCCTCTTCTAAAGTTATAGATGAGTGCCAAGTTGGCAGAGCAT 30  $\tt GTAGAAAGATCACTGCAGATGTCCTTGTCGTGTTGACCTTATTGGAGAATTTCCTATCTGTGATGACCTGTAAATGGAAT$ TTAAGGGAGGAATCACACGTGTTAGCACGGGGTTGGCATTGCGTGGCTGTTTTCAATTAACTTGACCACTATCATAACAT  ${\tt CAAAGGTGTGTACCATTCTATGACCATTGAATCTCCATGGACATGTTTTGGGAAATGGATTTGTCCCATTACACTGCT}$ TTCTTTAGTGCATAAGATCTTGAAGGGAGGGATGCATTCTATGCACCCCAAGTTTCTGGTTTACTCGTGGTTTCAGGAGT CCCTTTAGACAACATCACTGACAACTCACTATGTAAAACCAAAACAAATTATTAGCTTTCTTACTGTGTGTTTGCATTTGC 35 TTTGCTGTGCCATGTGCATGGAAGGAGGAATGAATGACTGTTGAAGCCAGATGGCCTTGCTCATTGATTCTCCTTT CCCGCCCTCTCAAGCCATCCAGAAGGAGAATGAAATGCTCAAATCAAGGGAGTTAACTATGGCCAAGATGTTAGTAATGG GAAACTTTGGAGGAAGGCAAAGTCAGAAATTATTCTGCAGGGAGATTTGGGGATGTTGGATGCTAAGGCCCAAGCCGTCT ATTGTATGCCTTTTGCCTTTGGCATAAAACAACAGATGACCTTCTGTTAGGTGTATCTCTGCTCATGCTTGAGAGTGGTGG 40 TGTTTGGAAAGACTCAATAGCATATGCACATGAGGAAGTTGACCAAATGATTCCACAGCGCATACTCATTTTTTGCTCTG ATTCTAGCTTTTCCTCCAATTTTATTCAGAATTTGTTCTTTTCTTACCTCACACCATATAGAAAAATCAACTCAAAGTGG ATTGGAGACTTAAACATAAGATCTGACAGTGTAAAATTAGTAGAAGAAAACAAGGAGGAAAAGCTCCATGACACTGGTCTG CACAATGAGTGTTTTTGTATATGAACCGAAAAACAGGTAGCAAAAACAAAAATAGACAACTGGGATTACAACAATCTAAA AAACTTCTGTACAGAAAGGAAGCAATGAACAGAGTGAAGCAGCATCCTACVGAAAGAGAGAGAGAGATTTGCAAACCACAC 45 ATGTGATAAGGGGTTAATATTCAAAATGTACACACGGGTAAATGCAAGAAAAGAATCTGATGTAAAAATGGCCCCTTCCA ACATCTAGCATTATTGTGTGTGAATAAATACTTGTTCGATTAGGTCTAATCACTCTTCATGATTGGATTTCCAAAATGT GGACTCTCAGCAGTACATTACAGGGACAGTGGTTGGGTCTGGAGATGTCACCCTTAGCTGTTTTTCACAATGAGAGGTTG TTTTTAAGGGGAATTTGGTATTTTTAACAAAGCATCAGGGGGCCGGGAGCAGTAGCTCACGCCTGTAATGCCAGCACTTT 50... AAATACAAAAAGAAATTAGCTGTGGTGGTGGCGGCCCCTGTAGTCCCAGCTACTCGGGAGGCTGAGGCAGGAGAATGG CATGAACACGGGAGGTGGAGCTTGCAGTGAGCCGAGATTGTGCCACTGCAGCCTGGGCAACAGAGCAAGACTCC55 GTGATTTCACAGTTGATAGACCAGGCACATCTCTTCCCACCCTTCCCCACCTAGGGGCAAGGTTTTCAGGAAGAGCCCC TTTTCTAAACCACACATGGCCTGGTCACAAATTTTATGAGAAAGCTCTACCCACTGAGAAGCACAAGGTGTGAGGCTATT GATGAGGAGTTGAAGGTGACAGAGACTGAGAAAGGGCTGCACACCTTTGGCCTAAAGGGTAATGAGCAACACACAAGGAT TGGGAGATGTTCATGGCAAGAAAAATTCACAAGGGACATTGTTGTTTCACTAATTCTGTAAAGGAGAGCAGCGGCATTTA CTTNTCCCGATTCCCCATTCTCTTTCTGTTTTTAAACAGAGACAGATCTTGCTCTGTTGCCCANGCTGGAGTGCAGTG 60 GCATGATGGCATGATCATANTTCACTATAATCTCGAACTCCTGGTTTCAAGTAATCTTCCTGCCTTGGGCTCCCAAAATG TCCTTTATTGGCATTGAGAGATAAGCACAATAATGATTGTTAAGATGGAATATTATGAAGGCTCAAGGAATACTTCTGAA GGCTTTTTGTCTATGAAGTACACGAGGTTTCTTAATAGTTTGGCCTCTGGCAAAAATGGTTTTATTGTAGTTTCATCCTT GTTGAGTCAATAATTAACTGAGTTTGATTAAAGCTGAATTTTCCTAAGTATGAAAACCATGTGGGCCCCTTCTCTTTCCTC 65 GTGATGCACGGTGATAGTGCGTATCTAACACTTGAAGGTGTCCACGCTGGCCCTAGCTCAGTGAGATGGCTTTGCTTTGC GGGGGTGAGGGGGGGGAGGTGGGAAAGGCAGCAAGCTACGATGTTCTTATGTGTGGCCTTGCTTCTGGTGGTGGG TGGCACACATGCTCTGTAGTCTTTCTGGATGGGTTTGGCCCCACGGGAGACCCCCTGGCTGTCCACCAGCCCCTTTGTGAT AGTCTCATAGTCTTATTTGGCTTGTATCCCACCTGTTCACTTTTTACCATAGCTAACCTTTCTAAGTGGTCAG 

AATGCCGGGCGTGGACGGGCTTCCTGCCTCCTGGCCCAGGGCCCCTTTGCCGGCTCTTAGTGTAGAGCACTAGTTGTAC CATCTGGTAGTTGTTTGTGCCTGCGACTCTCTTCCCTATTAGGCTTTGACTCCTTAAGGATAAGAACCATGTCTTATTTT TTTTAATCTGTAGCTCCAGTATCCAGCCCAGGACTTGACACCAGCCTCTGTCAAATACATCCGTGGAACGCATTTGTAAG 5 CATTCCGTCTTTAATGTGCTATAAATAGACATTCCTGGCCTTGCCTAAATAGGATTAAGTAGTACCAAATGGTCCTTACC GTTTCTGCCTGTGGGAAAATACAAAACAACACACAACAGCAAAGCAGACTAGCATGGTTCAAAGCACACATTGAGGTTTTTG GTGTGCCATTCTAATGCATGAGCTCATTTTGAGCCAAGGATAGCTTTTTGGTGTAGAATTTTGCCAGTCCTACGGTCATG CAGTACTAATTGTGTGTGTGACTTTGTGCAGTGGGGAAAGGTGGGGCTTTAAAATAAAACAGAAGGTATGAATTGCTTGG 10  ${\tt CATITGCTGTGGTTCCTAAGTCTCCGCTTGCCAAGATTAAATTGAATTATTCCCGCTGCCATTCAGTTTTACTCT}$ CATTITIACCATGAGAAGCCATAGCAAGATGTGCCAGGTGCATGCTGCTGGAACACCTGGCTGAGGCTCCAACAGCATTTT CCTATGACTGAGGGTAGGTAGATGACTCATTACAATTTATAAAATGGGGGGCTTAGCTTGGGTATCATCGTGGTT 15. ATTCGAAAGCTTTTTTCTATGATGAATTATTCCAGGCAGTGTTTACCAAAATTGTCATTGATCAGTACAGACCCAGAGAG CATGTACAACAGCGCCTGTGCTGGGCCTGCTAGGAGTCGATATTTTCTCGCTCAAAGAAGTTCCANAAGAATTCAAAGCC AGTGTGTCTCTTTCTCTGGAAGGCCAAGTGATGCAGGTACCACGCTTAGGTCTGCTGGTGTTTAGCTTGACTTAAAACCC AGCCAGGGAAATATGTTTCACTTTGCTGGGGTGCAGGTGGAGGAGGCTATTATTCTTAGGCATTTAACAGTGAAGAATGT 20 TGGGCAGGGCAGAGGGTCAGCTGAATGGCAGGGATTCCAGGTCTCAGTTAATGCCCACAAATTTCTGAACTTTGAACATA ATATCTTTGTGTAAATGTTTTGGCATTCTTTGTGAAAATCTTCAGATTTTCAAGAGCTTAAGATGACCTCCTCTAG CCGGCTGCAGCAGTGTCTAGGTATCTGTGAATGTGTAAGAAATTGAGACAGCCTGCAAAATAGCTCACCCAGCTTTTCTT 25 TAAAGTTCCAACCTTTTTGCTGCCTCTCTTTCAAACTGTACTGCTCACTTTGGGCTGTACGTTAGAACCACCTGAGAAGT TCTPTTTCTTTCTTTTTTTTTTTGAGGTGGAGTCTTCCTCTGTCACCCAGGCTGGAGTGCAGTGGTGGGATCTTGGCTC ACTGCAACCTCTGTCTCCTGGCTTCATGCCATTCTCCTGCCTCAGCCTTCCGAGTAACTAGGATTACAGGCATCCGCCAC CATGCTTGGGTAATTTTTGTACTTTTATTAGAGACAGAGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTGACCTG AAGTGATCCACCCACCTCAGCCTCCCAAACTGCTGGAATCTGAGAAGTTACGTGAAACTAGCGATGCCCTGGGCTAATGA 30 -AATCAGGCTCCATGGTGGGGAAGGATGTTGCGGTGGGGTTGGGGTGGCAATGAAAGGTGAAAACCACTGTGGTCCCACCT GCAAAAGTAAGAATTGTATCGTAGCCTGACTCAGGGTTTTAGCCAACTTCTCTGGATGCTAATGCTATTCTCTTTTAT ACTIGICTICCCTCCCAGGCACACATCCACTGGAGCTTTGCAGGGCCTATCTGCCCTTAGCCCTCCAATATCCTTTTCAT TTTCTTTAATAGTTTTATTGATATATAATGTGCCTACCATATAATTCATCTGCTTAAGGTGTACAATTCAATGGCTTTTA 35  ${\tt GTGTATTCAGAGTTTGCATCCACCATCACAATCAGTTTTAGAACATTTTCATTAACCCAAGAAAATGACCCCTTAGTCAT}$  ${\tt CGTACCTCATATAAATAGAGTGATATGTTAGTCGTCTCTTGTGTCTGGTTTCTTCCTCTTAGCATCATGTTTTGAAAGTT}$  ${\tt TATCCCTGCGACAGCATCTACCAGTTCATCATTTCTTTTTGTGGCTAAGTAATACGCCATTGTATGGATATACCACATTT}$ TGTGTATCCATTCATTAGTTCATGGGATTTTGTGTCCTATTATCAVATAATGCTGCCATGAGCATCTGTGTGTCCACAAG 40 TTTCAGCATGGACTTCTGTTTTCATTCCAATATCCTTTGATGACATGTCTTGGCAGTGATGTCTATGACACTGGGCAAGT GTCTTAAAATGTTGTGCATCAGAAAAAAGTCATCATTGCCAAGGCCAGCAGATCTCGAAAAGGGGGCTGGGATACGTTGG 45 TATTTGAGCCTTCTAACAACATTGCCTTTCATATGTTGCTGACTGTTTTTTGAGATTTATGAGGCCTAACTCGCAAGCGAT GTGTGTCTGGATTAAGAGAACCTGAGAATCTCTATTTATGTCTGACCCCAGGAAATTCCCTTTAAGCTGCTTATCAGAGG TGCATGCTGAGAGCATGATGGGAAGATGGAGTCTTCCATCCGCTGGTAAAATCTGGAATCTGCTCTCATTTCATTTTCAC TGAACTGAAAATAAGGTAACAGACCCTCAGGTCTACCTATAAGTACCTTCCAACTGTTCCACTTTTGTAAATTTAGTTCA AATAATACATATGCTGAAATTCCTATATCCCCCCATACTCCAGATCTTCAGTGTGGAATTTAAATATAATTCCTTATTG 50 TAAAAAAAAAAATTTTTTTTGATCAAGGTGATTTTGATAAACTAAATGCATCTTTAATTTTACTCACAGCAAAGCGAT TCTTTATTTTCTCTCTAAAAGCATAATTGATGTGCCATGATCTTTGTCTTTGCATTTTTAAAACTGAAAGAACATTTCCA CACCATTAGAAATAAGATTTCTTCTTAAAAATATTCACAAGGTGCAAACACTTACATGTGTATATGCATGATTTCACCAC CAGGGGCATTGTGGTTTGACTGTCCAGTTAAAGAGCCTGTGTTCTATCAGTTTACCCAGAAACTAGAAGGCCTGCGAGT ATTICTGATTCCTTCCAAGAAGGATTCATATCTGGAAGAGAACAGATGTCGACTCTTTTTCCTCTAGCAAACAGTAGT 55 AATAACATTCAAATACATCTTAAAGATGTCAGGGGGAAAAAAGTGCTTGGCAACTGTGTTTGATAGATTTCTTTTA ACTGAAATACCAGGTGTATAGAAATGCATCTGTGGAAAAATGAAATCATATATTCTCTAGGATATATTAGGAAATGGCTC 60 TTTGGCAAGTCTAGAGGGTAAAGTATCCCTGAAGGGGGAAAAGGTTTAAAAAACAGTAAACTAAAGAAGATTGTTTTTCTG AAAGAAATTCCCAGGAGAAAGGTACTTTCTGAGATTCACATATGTAGATTACATTGTTATGAACCAACATTTATAAGCAA GCTTGATCTCTCAGAATGCGTTTGTCTATCTCAGATTTTCAAGAATCCTCGTACAAATTGTCCAGGGTTTCCACCTCGCA GTTTTCTTCCAGGGTTGCTATGGCATGGAAAGTACATTGCTATTTGTTATGTAAATGCTCAACAGACTGGCTCATTCCA 65 TCGGTTTATCCTGAACACATGTCTGCATCRGGGAGGATGGGAGAATTAATTCCAGTTTCTCAATTGCAAAAGTGAGGC TGGTCATGGGGCTTGGAACCACGCCACGGACGCATGAAGCCTCCCCGTTTACATGCCAAATCCAGAGCTTAGGCATCCAT GCTCAGGGCTCTCTGTGGTAGGCAACAGCTGGATTATTTACTTTCTAGAATATCTCGAGTTCTTAATCTGAGCAGTTTCG AAACCAAGCCCACATTAATTAATATAAATAATGACTGGGAAACGTTGCAGGACTCCCCGGAAAAGAATGTATAAGTTGAT GTGTTTTTGTATATGCTTATGTATATGCCTTTGTGCACGAAAGGAGATAAATGGTGTATTTCACACAGTTCCTTCTCCTC

AATTCTAATCCTCAAGCCTCTAGTAATGCCTGGAGTGAGAAAACAGAATATTGTTCTTTTCTGTTTATATTTTTTCATAC TGAGTTAACACACTTGCCAAGACTCCGAGGCAGCTTCTGGCATGACAATGCCTTCTTTAACTAGCCTAGTTTTCTAGAATA 5 AAGTTCGGGTCCACCAGGCCCTCTGAGTGGGGGCTCAGGACACTCTGAGATGGAAGAGACTGGAGAAAGCCAATCTGTTTC TCCCTGAAAATCATCTTACTTTTTTAACGCTTCGTACCTAGATTTGGCCTGGGCAGCCCAGGGGAGACTGTTCRAGCAAC CAGTCCTGGCCATGCCTCTCTCTCTCCCTAGCACAGGGAGCATGCAGGCTTAAGGCTGGAAGAAACCCCAAGCATTTGG 10 CCAGGAAGAGCCAACTAGTTCCAGCTGGCCCACATACTACACTTTAAAAATTACCCAGATGATGTGATTCTGTARAGAGA GAGTGGGTGGAGAGGACTCCAGGGCCATGGAGGAGGATCCGCCTTTCTCCCTAATCATGAGCAATGTGATTTGGAGA GAGAAGGACCCGGTTGGCTCTGCAAACCGCATTTCCTTGGCTGAACGCCAGARGAGAGAAATGATCCGGCAAGAAGACAC ACCATTCCCCGTCAGCCCTACCCGACCCTTGCACCCCTGGATCTTCTGCTGAGTATCGGATTGGTCTGCGTCCAAGAAG CTCCTCGCTTGGCCAGCAGGGCTGCCTGGAGAAGGGGAGGACAGGCTTCGAGTTTTTTTGGGTAGKGACTTCTGTGGACG 15 TGAAAAGACTGCACCAGAAATCGGAGGCAGCCCTCCAAACATAACTTGGCCTCTTCGTTCTCCTCTGGGACACACAGGCT GTGTTCTCCTGGCCAAGAGTCCAAGCGTGTTTTTGGCGCGCTGCTGACACTCTATATCGCTTTTGCTTCGGAAACGAATCT GGTCAGTGACTTAGCCACTCTATAAAAATGAAGAGCAGAGCTCGAGTGCTTATAACACGTCATTITITACCCAAGACAGAG AARAAAACGAAAGAGACCTGAGCATTCCTTTGAYTCCCTSCACCCCCGGAAGGTATATTCAGAGTCTCCAAGACTGCC 20 TYTTTTTTKGTACAGAGTCTTGCTCTGTCGTCCAGGCTGTAGTGCAGTGGAACAATCTCTGTATGCTCCTGCAACCTC TGGCTCCAGGTTTAAGTGATTCTCCTGCCTCAGCCTCCCAAGTAGCTGGAACTACAGGCACCTACCACCACGCCTGGYTA ATTITITITAGTAGAGACGGGATTTCACCATGTTGGCCRTATTGGTCTTGAACTYCTGACCTCAAGTGATCCT 25 GTTGTCATAAACCCTGGAGGAGAAGCAAGATCTTTCTAGCAGGAGCAACATCATCCCAAATAAAGTGATAGACTTTGATA GTGTTCTTCTATTCAACCAACAGAGAACAAATGAAAAGAATCAGGAGTCTATTGAGGAGACAGAACATGAGTGATT CCATAGATTGGACTTCACATTCAAAATGTAAATTGTGCCTAGGAAACATCAATGCTTATTTTAAGCAAACTGACCCTTGG 30 GATAAAAATAAAAGTCAAAAGGAAACAAACAATGTTRCTGAGAAGTGATAGAATATTCTAGTTTATATCTCAGTCATWT TACAGCTCTGGCATTTCTGGGGAACACTTTAGAATACTTCCACTCCGGTTGGTCCATAAAAAGCTGCCTGTGTTTTTTATG TTTTGAAAATACACGCAGAGAGACCCACTGCATGTCYTATTAGGCATCTTATCCTTGAGTAAGCAGGCATGCAACATCAG 35 GTGTGCTGAGCGCAGAGCCATTCTCAGCATCCTGCCTTGATTAATAAGGCGTGAAAGATCCTCCGAATTMGCACCTGTTC AGACAAGCTTGTCCAAYCCATGGCCCCGGGTCGCATGTGGCCCCAGGACAGCTTTGAATGTGGCCCCMATACGTATTYGTA AACTITICTTAGAACATCAGGATTITTATGCACGGACCTTTTATGCATGGACTGTGGTGTTTTITTGATTITTTGGTTGCGTG TGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGACRGAGTCTTGCTCTGTCACTCAGGCTGGAGTGTAGTGGCATGATC TTAGCTCACTGCATCCTCTGCCTCCCAGGTTCAAGCAATTCTCCGTGTCTCAATCTCCCTAGTAGTTGAGATTAGAGGTG 40 CTCCTGATCTCAGGTGATCCTCCTGCCTCAGCCACCCAAAGTGCTGGGATTATAGGCGTGAGCCACTGCGCCCGGCCTTT TTTTTTTTTTTTTTTTTTTTTTTTAACGCTCATCAGCTATTGTTAGTGTTAGTGTAGTTTATGCGTGGCCCGAA GACAATTCTTCCTCCACTGTGGCCCAGGGAAGCTAAAAGATTGGACACCTGTAAACAAAAACAACACAGCCATCTAGCTG .CAAGACGTAGCTAATTGCTCTGCAGAACAGGGTTGGCCAGCCTTGGTCTTGATGTCKGAGTGTTCTCTAAACCTCACACCC 45 AGTCCCTATTCTTAGGTTTTATTTCTCAAACCAGGTTTTGCCTGAGAAATTACAGCAAATGATTCATAGCACAATGATGT TGCTCATTTTTGATAAGTAGTTGAAAGCTGATGGTGCCCTCCATTTCAAAGCAACAGAAGAAACGCTGGTGGTCATGGAG AAAGAGTTGGGAAGCAGAGCGTGAATGCCGGGATCTCCAGATCTGAGCACTATGCCTGCAGCCGATGTCTYYCCACAGGG CYKATTCTGGTGGCTCGGGGGTGCCCCNTGGTCANRAAGGGGTGATTACTGTTTMCCTCTCTCTCTTGGTCTCTTGTCAA 50 AAAAGTATCCTCTCTAGGCAAATAACGAGATTTCGCCAGCAGGATCTCCCGTTAAAGGCGTGCATGTGGGCTTTGTAGA CGTGTAGAACAGGACAGGACAATGACAAAGTTATTCAATTAATAATTGAAGCTTCCCGGGCATGGTGGTTCACGCCTGTA ATCCCAGCCCTTTGGGAGGCCAAGGCAGGCAGATCACCTGAGGTCAGAAATTCAAGACCAGCCTGGCCAACATGCCAAAA CCCTGTCTCTACTAAAAAATACARAAGTTAGCCGAGCGTGATGGCCAGCACCTGTAGTCCTAGCTACTTAGGTAGCTGAG 55 GCAGGAACTCGCTTGAACCCGGGAGGCGGAGGCTGCAGTTGAGCTTGCACCACTGCATTCCAGCATTTGGTGACAGA CGCATGTGACTATTAGCTGTGCTTTGTGCGGTTATCTACGTCTGTTGTGTCTATACGGTGGAGTATTTGCAGACGCTCTG CCAGTGTGCAATGCTTCCCAGCCCTGCATTCAGGGATACCAACTTGGGTGCTGAAAAGCAGCGATGGCAGGACTATTTAC 60 TGTTAATAATGCAGATTAAATTGAAGCGTACAGTGCCTATAAACCATTACATTATGAATAGTATAAAAAATTGAGGAAGC CGTGTGGCTCACAAATTCAGCACTTTGGGAGGCCGAGGCAGGAGGATCACTTGAGCCTGGGAGTTTGGAAACCAGCCCAGG AGTCCCAGCTTCTGGGGATGCCTGCAGCGAGCCATGATTGTGCCACTGCTCTCTGGCCTGGGCAACAAAGAGAGATYCTG 65 TTATGAGTCACTTATGCCCTTGAAGAGTGAGTGATGTATCAAAATATGTCTGTTTATTGTTTCACTTTCATCCTTCTT TTTTTGGAGATGGAGTCTTGCTCTGTTGACCATGCTGAAGAGCGTGCCGCGGATCTCCACTCACCGCAAGCTCCGCCTCCT  $\tt CTGCCTCACCTCCCAAAGTGCTGGGATTACAGTCGTGAGCCACCGTGCCGGCCACTTTCATCTTTCTGATTAACTGAAAA$ 

GTATCAAGCAATRCTTACATGTAACTGCACTTTCTCATCAACTGCAACCATAATTTAGCTATGGATACAAGAGTTGGGCA CAAATCCATGAAAGCATTGAGTGAGAATCAATTGGCTCTGTGGGATTTACAATAAAGAATGTTGTTTATTTTTATTKGTA AATTGTGTGCYACAGATCCTTCGTATCAGTAAAATGTATGATAAACATATGTGTGTATATTCACACACCCCTTTCATTT TGGCAGGAGTGTTTGTTAAACATTTACCACAGCAGTGGATTCACTTCCATCAGCTGCTAACTTTCAAGGATGTTTGAGGA 5 TGCATGACCTGTGCAATGCACCTGCTTCGGTGCCTGGCACAGAGTCGCAAAGCCACAAAGATGGTGCTTGTTGTTGTTAT GTGTTGTTTCCATCTGATATCACCATTGAGGGGAGCAAGATGACATGTGCCTACCCCACGTGTCCAGCAGCAAAGCCACC TGGCATAGTGGGCTGCTCAGCGTGCCTGGTTCATACTGCGTRTTTATAGTCCCAGGGTGTTTTCAGAGAGYAAAAGTCCT TTATGATTAGCAAATTGCAGGTCCTCCCCTTTCTGATATTTACAGCCCCTTGCAACCGCCTGTACAAAAATCGGGAAAAGG 10 TAGTCACCATGTCTTTTCCCTTCCGTCAAGCCTTTTAGCGGAGTTCACAGGGATGCCTTCGGTCCAGACACTATGACCGT TGACGAAGGATTTGAAATATTTTGAGAACTCTGAAATAATGCACACCAGAAACGTCCAGCTGAAAACAAAAAAGGGAACAA GATGACATTITGCAATCCCATGCACGTTGCAGGCRCGTTGAATGTGAAGGTCAGTAGTACTICAGAGGGCAGGCCTGTTG  ${\tt CCCCCAAGCCTGTTGCCTAAGAAATGCCCAGGCCCTTTGAACAAAATGGATTCGAGTGATTACAGCACGTCCTCACTTAC}$ 15 AAGTGTCAATATCTGTAGTACCCCCCCCCCTAGGGTGCTGCTAATAAAATGCCACAGATAGTCTTGGRAGAGGCATGAAAA TTTTGTCAGAAGGGATCYGCTGGAATGAGACARAGATGTCTTGATCTGAATATTAAATACAACATGCTGTTTATGACATT ATCCGTTTACTGCTAAAATACCCAGCTACTTCTGTTTACACATTCTTCTGCGTTGAATGGGTAAGATAGCATCTCATAGA TCCACTTTACATATGAAAAAAAGTTGTATCAAACTTGCTGGGCATCAGAAATAAAGGGTTTTAGAGACACTGGCTTCAA 20 ACACAAGTTATTCCATCCAAGATTCTAAACTTAGCAATGCAACTTGCACTTAATTTTAAAACGCTGGAAAAATAATGATA AAGATTGTGTGATCAAGTATAGCAGCCCTGTGGTGTTTCCTCAGAATGGTGTATTACAGAAAAGGAAAAAAGCCATATAC ATGGAGAAAAACTCCCGATATTTAATATTATCAATTGCTGGTTCCTGTAAATTTGCATTTATGGATCACATTATAAAAG CAATTACTCTTATGGATTGTTCATGCAGAAATGCAYTATGATGATRATATACTTTTAAAAGTATATTTATTTCCARAATT CAATTTGTAAGAGGTTTGAGGGAAAAATAATACTGAGTTTTGAGTGTTTCTGATTTTAAAAAATGKKKKTYRAKWRRAAT 25 WAAACGTSTTCACCMMAAAACCCATITTATCCCCTTTTAAATTWATTGGGGCAAMTTAAATTGTATTTACTTAGCATTT AAGCTTGACTGGCTTGTAAATCAATGAAGGTTACTGTTGCATTGCTTTGAAATTGAATTTAAAAACAGAAACCARASCAG . 30 TCCCTTTGCTTCCGAATGCAGCCCTCCCATTGGAATCACTTTGGAAGAATCTGGATCTGCGTGTTACCCAGTCTTACTTT KCAGGCAGTCCCAGGCAGGAAGGCCCATTAGTGAAAAGAGCCCTGCATATGCTGTGGGTCATCACAGCTGCTGCTTTGCA TAATGAACATGTGCCTTTGGAGATTCCAACTGGTTTGTATTTTCATTCTCCGTTGGTCATGGCCCCATTGAATTTTGAT 35 ACTICAAAGATGCTAAATTATCTCTTTCTATGTAAGTAGGAGGCTCTCTTTTCAGATGTGGAATTTGTAGGAGCTTGAATA TTCTCAAGAGAGGGTATGGGCAACATTTGATAAAAGATGTAATTATTGGGTCGTAGGAAATAATGATTGAGATAGGGTAT CCACTGCCCTGGTGGGGGAATCAGTGAGGCTAGGAATCACTGGAAAATGACATTCCTTGAGACTCCTTCAATGGGTAGAG TTTGCTTTAGCTTTTCAAGTATCTTACTGTATGATGGTTGCTTTTGGGTTGAATTCCACCTTGGGTTCAACTTCAACATGA AAGITAACCTITTGGTGAAGGAATGATCCASGGAAATAGTAAAATATTAGCCTGTCCTCCAATACAAATTGCCTGTGAG 40 TCCCACTGATACTTACAAATATACAGAGGTGGTGTAAAAGGATTCTGTGTCAAAACTATTAATATTTGAGAAATACAATA CTTATCAGAGCCTTTGTATGTAAATGTCTCATATACCCCTCTAAGAASGGGAGCGAATAGTATTTTCCAAACTTACGTCA CCACTTACCATCCACCTGCATACTTTACACRTCTTGGAATCAACCTTACAGGGAACACTTGGTCGAAAAACAGTGTTTTC TAAATTTATATTACAGTTCCCACTCCCCCCCCCCCCACTTGTATCACTTTGTATGACAGTCTTCTTGGGAACATCCATTG GGAAACTCTTCCCTTGCAGGTGTCTGTTACAAGTCCTGGTTCACACAGTGTTGCGAAAGAATAGTTGTATGTCACAATTT 45 TCTTTATATAGTATTTATTGAGAAACCTATTCTGTTAATAGAATGACTCAAAAATCAGCCAACCCCATAAAATACTGCTC AAGCATTTAGAAAGACTTTCTCTATAGAGGCCTTCAGACGTCAGAAAAAAACTTAGAGAGTGACTTTCAGATACAGCAACC TAATTAGATAATTATGTATAATAAGCACATTAATTATGTGCAACAGCTGCCGTTGAGTGTGCGATGTACAACTGCTTGA AAACAGCTTGTGAGGTCACTATTAGGTCCATGAAATTTTTCTCCTTGGCAGGTTTTCACTATTAATTTGCTTGACAAAGG **50**. ATAGATACATTTTCCATGTGGGGGGGAAAAGCAGTGCAGTGAGCTAAAAAGTTAACAAAGGTGAAGTGCTCCTAATCTG CGGCCCTGGTACACTTAGATAGGCATCATTGCCTTTCCTCTGAGCTCTTGGTGCTGATAACAGCTTCCTTGACCGATAAG TGTACCAGATTTCCTTACCTGTCCCAGGGCAAGATAGCAAGAGTTTCTTGATGCATTTAAAAAATGCATTTAGTGTTGGC AAAAGGCTTGCAATTTATTATTAAGTGGAATAAGCAGTTTAAAAACAGTATGTACAGGGTGGTTTTCTGGCTATATAAAC ACACAGGCATAGAAAATAGATATACATAAATAATGITACTATAATTTGTCTGCCTCCCTTCTCTCAGAAAAGACCAATGA 55 ATTATCTATTATGTGCCACTCACTATTTGAGTGCTGGGAATACAGCCCCATAAAGTGAAGTTTCATATATCAGGTAGCAA GATGGCCCATGGTCTGTGTTTGAGAATCACAKGCGTTTTGARGCTCATGGCTATAATCCCAGCACTTGGGGGAGGCCG AGGCAGGTGGATCACCTGAAGTCANGGACATCAAGACCAGCCTGGCCCAGTGTGGCCAAAACCCCACCTCTACTTWAAAA ATACAAAAAAAAATTAGCTGAACCTGGTGGTTIMACGCCTGTAATTGCAGCTACTCAGGAGGCTGAGGCAGGAGAATCA  $\tt CTTGAACCCGGGAGGCTTACAGTGAACCGAGATCGTGTCACTGCACTCCCAGMCTAGGCGACAGAGCGAGACCCT$ 60 GTCTCAGAAACAGAAAATAAAACAAACGAAGAGATAGTATTCCATAGCTGACTATTTTCTGAAATGATTTTGTTACTTTT CTAATGAGAAAAAAATAGATCTCGTGTGTGGAGGGAATTGAAGATGTAATTTCAGACTCTGCGTACAGCTAAGCTCATCG TAGTTACTTAACTAACACTTAAGGAATTAAATGGCATATCTAGTGTTTAGAGAGGCACACTGAGATGAGACATCCAGCTC GTTGTCTATGAACGTTTTTAGAAACGTCCTGGTGGAACCATCCGGGCATCACATAGCTATCTCTGTGCAGAGCCAGGCCG 65 GATGCCTAGGTGAGATGGAAAGCTTCCGTCAGCTTTCTTGCCGGCCTCTCCTCGCAGCCGCTCCCTTCCACACCTGCCTT TTCACCTGCCAGACTGCGCGTTGCCCCTAGGTCTGCGTGTTCAGCACTTCTGCAACAGTTTCTTCTGCAAAGGT AACTTAGCGGAGGGTACAGGGTCTTCTTCCAATAAGTCAGCACCTTCAGTTAAAAAAAGCAATAACATTCTCCAATCTTG GCAGTCTGGCAAGGTAGAAAGACACCTGAAGGTGAACATCTTTGGCCCCATGTGAAATTTTGTTACGTGTTGTTAGGTTTC 

TTCCCTGCTCCTTTTTAAGGTTTTCTCACAGATTAAGAGAGTAGCATCTCCTCATCCCAATTATTGAAACCGTGCAA CACAGCTGACAGCGCCCCGGGAGTCCTTCACACTCTTCTCTGAGCTCTTCCATCCTTAAACAGACATCTTATGCCAAATGC AGGGAGGTTTGCTGTTGCTTTTACAARAACACTGTCCTGTTATGCTGCTCTTTTGCTTGGTTTTCCTGGACGGT 5 CACAAACATACCTCCAGGTCAACAGTTAAAGAGAGAACCCACTTCTTCTAATAGTTGTGTAATATTCCATACTACAGATA TTCTGTTATTTATGGTAGCTAGATTTCTATTCATTTTTAATTCCCATGCTCAGAGCTTTCCAGACATTTGGAAACATTTT AGAAAATTGACATCATCTCTTCAAATATCTGAACTCAGATTTCCTCTGTGATGTTGGAATCTTTAAAATATCATGCATAC TTGGCCTGTTTCTACAATTTTGGTTCCCCAGCCATCGTTCTCCATTTTGCACGTGTATTGTCTCCTCCTATTCCTCTGTA 10 AACGCGAGGGTTTCCTAATGCTCCTTCCATTTAAATAATTCAAAAATCCGTGGCAAGGTACCTGAAAACTACTAAGAGAA ATCAAGATTAACATTATTATTATTGGTGTTACCTCATGTCTGTACCTTTTTGGASACGTGGGTCTGTTTCCCGAGAAATC 15 CTGAGAATACTAAAATCTTACAGTGCATTTTATAGGAGTGTGAATGATTTTTCTGCAATTGACATATCAAGGAGCTTATC ATCTATTATAAGTTACCTTTTCCTGAAACAAAATATTTGTCAGATGTAACTTGGTACCCAAATGCCTTTTCTTGCTAAA CTAGGAACTGTCACACACACCCACCCACCCCTTTATTCTTGGTTCTCTCTATATTTTGACATTTGAAGCATCCAC AGAAAAGTAATAGAATGAGCAATTGAAAAATCACCAGAACTGAAATTRTTTCCAGCTATGTTTAAATATGAATGTSYTTGT 20 CAACAGGGGATACAAATGGATTTGAATTCTGTAACTGTCATWTTGTGGTCCGGAGAGGGTGGAAACTGAAGTATCCCTCT GCGTCGCCACATCTGTCAAAAGTCCTCAGCGCTCCCCGCAATCCATGTCTGGTGGAAGCGCGAGGTGGTGAGGATGGAAA GGGCATGCGTTGACTTCATGTTGGGACGGGTCTTAAACTAAACACATGTCACGTTATGGAGCTGTTTACCTTGGCTTTTGA CTATTITITITITITITITITITACTCTGAATGTGTAACTTTAAATGAAGAACCAGGACACCTCATCCTTTAGTC 25 TTTTCTTTACTGGGGGGGGGGAGATGTTGTGGGCCACAGAGATGGACTGAAAAGAGAAGTAACAGTCCTTGGTTTGTA TTCCAGCCCCACCTTCCTATGTCTTTGAGCTTGGTAATTAGATGCTTGGAGCTTCAGTTTCCCCATCTGTTGGATCAGA ACGGCAGTATGTCCCAGTATTTTCATAAGAGTCACATGAAATATGTACCTACAGAGTCTATCACTGTGCTTTTTAA AGATGGAGTCTTGCTCTCTCACCCAGGCTGAAGTGCAGTGGCGTGATCTCAACTCACCGCAGCCTCCGCCTCCTGGGATC 30 AAGTGATTCTCCTGCCTCAGCCTCCCGAGTAGCTGGGACTATAGGCACCTGGCTAATTTTTTGTATTTTATATTAGAGATG GGATTTCACCATGTTGGCCAGGTTGGTCGTGAACTCCTGACCTCAAGTGATCTGTCCGCCTCCGCCTCCCAAAATTGCTGG GATTACAGACGTGAGTGACCACGCCTGGCCCATAAATGTTATCTTTATATAACATACTCACAGCTCCCTTAGGAGTACTT TTGTCCATTTCTACACAATGGAAACTTATAATTTTAGCCTTAGCAACATGTATTTACTGGGCATCTAGATTTCATTTATT TAAGAACTTTTTAATTGAATGCCGATTTGTTCAGCAGCCACCATGCAAGGTCCTGGGGAACCAGTGGGCAGCCACACAGA 35 GAAGGTCCCAATGGCACCAGAACAAGGCCAGCTTCCTAGGAGGTGTCTGGCTTCAAGACAGGGATTTCCTTTAGCTGGGT GGTAGAGAAATGGATTGCCTGTGATTTCACTGTGCATAAAATGACCTTTCAGCCCTTAACCTGCGACATCCACATGTGTT CTTTGGTACTCACGGGTGTTATGGTTCATAGCTGTGGTCTTCTGAAGTATAGGAAAAAGGCAGCTTACAGAAAAAAACTTG CTIGTTTACTGTCTTCTGAGCTGATTTCTCACCTACTGGCAAGTGGATAGGTCTACTTTTTGTTTAGCTGTTTTTCTAAT TTAATCTTRTACATGAGACAGCTATAGATGGATGTATAGTCTTTGAAGTGGGGCCAGTTGGCTCCGTCTATTAGCTGTGT 40 GGCTTTTGTGCAGGTGACTTGTGGCCCCCGGCCTCAGGGATCTCATCTCTAAAACGAGGCTCTTGATGTTACCTGCCTTA CCCAGCTGTGAAGATTAAAAGGGTTTTGTGTGTTAAAGGACTTGCGGAGTGCCTAGAACCCAATGAGGGCCACAGAGCTT GCTCCGATTGCTTTCCTGAAGGCAGTAAGCATGTTGCTCTGGTAATAGTCATCTTCACGGCCATCATTTTGATCACATTT TGGCTTAGTTTCCTCCTCTCCCCTCTCCCACGTCAGACCTTTCCATGGAAGGTAAAACATGTTAACAGTCTAATGTGTT 45 TACACAGATGCATATTTAGGGTGTGCTATGGTTAGAAAGTTTGCATCCCCCCAAAATTCACAGGTTAAAATCCTAATCCT  ${\tt CAAGGTCGTGACGGTACTACAAAGCAGGACCTTTAGGACATGATAAGGTCCTGGGGGCGGAGGGTACTAATCCCCATGAA}$ TGGGTTTAGTGCCTTTATAAAACAGACCCAAGAGAGACCGTTATCCATTTTACCATGTGAGGAGCCCACAAGCAGGTGCC ATCTATGAGCCAGAGTGGACCCTTACCCAACACCACATCTACTGGCCCCTTTATCTTGAACTTCCAGCCCCCAGAACTGT GAGAAATAAATTTGTTACTCATAAGCCACCTAAGTTATACTATTTTGGGATCGCAGCGTGAATGGACTAAAGGTTTTTGA 50 GATTCTTTTTCAGTAGTTTCACCTAATAAAACATGGAATCATTCTACGCATGCTGTTCTGTATTGTAGTATGGTTTTCC  ${\tt ACACTGAGAACATACTGTGACCATGCAGTCATTTCCCAGATGGAACTTATTGAGGGACATTCACTTAGTTTCGAAAGGTT}$ TCTCCCTCCACTCCCATCCCGCCACAGATAGTGATGCAATAACATCCTTGTTCGCATGTCCAGTCTGAAGCTTTTATTC CTATGGGATGAGTTCCCAGGCATAGGATTGCCAGGCTGGACTCTAAATTTTGAAAAATGGATTTTTATCATTCTGATGGAT TACGGTGAAGAGCCAAAGTCTTGATAGAAACACTCAACGCAGTGAATTTTTTTAGATGTAAAAGTGGATGGTAMTTAAG 55 GATACGCACATTAGAAGGAGTAATTTGACCAGCCCATCACAGTATTAATTGATTTCATGTCTCGAAGACTTCTGATTTC GTTTTCGAGGCTGGAAAGCCCAGCAGTTTTTACACACATATTTTGCAGACAAGTATTTAGAAAGTAACTA GCCTGCTTTTACTAATGGTTCTGTGGAAGAAACACAGCTTGAATAAATGTCGTCTTGGATGCTCAGCACAGATTTGCCAGT  ${\tt GGCCCTGGCTGATTAATATGTTTGTTATGAAGTCTAGGGTACGTGGGGGAGAGCTTCATGAATCCCTGCATTGGCCACCC}$ 60 CTGTACCACRGCCAATGATTCACCCTCCCTAAATCCCAGGCCCAGATATTAGAACATCTGTGATGAGGACTGATTTTCTG TTCGTGGCCTCYGGAAGTCCAGTTTTTCTGAGCTCAGGGGAGCCTTGGTTGTATTYTTATAGGCAAGAGACGAATTTACA TTTTGCCATGGTGTTAACAAGCAAAAGAAGACAAAAGAGCTCAAAATAGACAGTGGCGTGCTGGGGTCAGGGGTGCTGGT CACCAGGCCAGCAGTTATGGGTGAAGGCCTGAATTTCCAGGGTCAAGGAGATTGCCTCCAGGCCCCTTCTGGAAACACA CTCCCTGAGCCTTGTAGAATTGAGTTGATTCTGTTTAACTGCCCAGTGAAGAAATGACTTCCTTGCTTTAAAACATTTGA 65 CAGCTGTCTTATATAACTTAATTCTTCATTCCAGTGGCTTTTGGAGCAGCCTCAAAAGTCATTTTATCTTCTTGGCTCTT TGATATTATTTGTAGTAATTTAAAGTAATTAGAGACGGGATCTTGCTGTGTTGCCCAGGCTGGTCTCTAACTCCTG GCCTCAAGTGATCCTCCCACCTCAGCCTCCCAAAGTGCTGGAAATAAGGTATGAGCCACCAAGCCTAGCCTTGATATTAT TTTTTAATGGGGGTGTGTGGGTGGTGATGGGGATATTCCAGCAGAATATCAGAAACAGAGATGAGGAAGCAGAG AGAGCTCAAAGACAAGGCTCAAGTTCATATTCCAACGCCAGTACCTGCCACCTGTGTGAAGCTGGGCTAATTATGTGTTT

AGGTTTCCTCCTTCGTTAAATAGAGTTCTACTTATATTACAGGGTTGTCATGCAAGTTGATGAATTAAATACGCTAATAT ATATAAATTCTGAGTAAGTATTAACCAAAGAAATGGAACCATCAATATTGGTTCCCAGTCTAGTTCACAGGTGTTATCAA GATGGTTACCTTTCTAAGTGTCTTTTTATTTCACTAGTTCCAAAAAGAGTATCTCTCAAAAATATTAGGTAGTATTTAGTCA ACACTTTAACACATAACTTGTTTTTTTTTTTTGGCATAAGAAGCCCATGTGAAAAACACAGTTGACCCTAAGCCTATGAAAA 5 TGGGTACTGGAGATGGGGACAGTGAGTATTTGAAGCTCACAGCAGGCCCATTTTGCAAGTTTTCAGGAAACTGAAATTCA 10 GGAGTTGAAAAATAAGGGTTAGGATTAAAAAAAAAAACTAGTGAAATCAAGACACCATTTTGCTTAATTGAAGGCTTGCG GAACATTAAAGCACAACAAAAACCTAATTCTTTGAGTGTTTCTGAGGCCCAAGCCTTTTCCCACAAGGCACTGTGTACACG CGATGTCACTCTTCTCTGTCTTCAGAAGCTGTCATATGACCTCCAGATTTCTCTTTGACTCCCTGTATTACCATTAG AAGACATCTACACTGGGAAATTGCTCAGTTCCTGTTTTTGATTAATATTTTTATCAGCCGCAAGAGGAAATGGTATTCTAT AGCAACACTAATAAGTAATTGAGCAGATGAGATGCTCTTGCTAGCTTTGGTAAAAAGTCGGGGCAAGGTTACAACAGAGG 15 AGCTCTGATGAGACTTGGGATGGTAAAGTCAAGTCGAATATCTGGTAGGGTTAAAAAATCTAACAGTGGGCCAGGCGCAGT GGCTCACGCCTGTAATCACGGCACTTTGGGAGGCCAAGGCAGGTGGATCACTCGAGGTCAGGAGTTTGAGACCAGCCTGG CCAACATGGTAAAATCCCGTCTCCACTAAAAATACAAAAATTAGCCAGGCATGGGCATGTGCCTGTAATCCCAGCTAC 20 AATTATGCTCTAAATCCTTCTTTGAGCAGTGGCTTACAGACCTAAATTTATCAAAGGTGGTGGCAGTAATAGTAATAATT AGTATATATATATATATATATAGGTAGGGTAGACAGCTGTAAACTGGATCCCCTGCTGTACCCAGCAAATGCTGAGAGCCCTGCTTCCCCTCTTGTATTCAAATGGCTCTATAAGAGAGGGAAGTAGTACAGCTATCAGTAACAATGCCATCCGGTAATTACCGAA TCATAAATGTTTGGGGAGCTGAAGGTCACGGGCTTAGTAGCAATTCTAGTCTGATGTTTGATTCCTTGTGAATTTTAAAT 25 GCTTGTACTCTCTATCTGGGTGATGGTGTTTTAGTTGCCAGTGGACAGTCTGATGGAGGTGGGGGAAGAGTTATTCTTCC ATATTTATTTTTCTCCACCTTGGGTGAAAAAACTTCGCTTTTCGTAATGTGGTACAGTGTGTGCTTCTGTAAATGGAAAT GGTTTCAGCACATCACAGTCATGCTTCCCTGTTGAAAGATGCTCCGTTTTCCCGCATACATGATGTCCAGCACAACGTCT GATTTATGAGAGCATGACCCTGGGGGCCTCTGGAACAGCTGCTCACACACTCCCTTTAGGAGGCCCAGGCTCTCAGGGGA 30 GGCCCATAGTGCAGCTAGGAGCTAGAGTTTTAGGATGAAGAAATTACAGGTAAGAACACAGCCCCATTTTAAGAAATACC AGTGATTTCTGTTTTTCCTTGTTCTTCCCTCAGTATTTTATTAACATGTGCTACTATACAAATACACAATTCACTT AGGACTCTGTTTCGTGTGGATCACATGGGAGCTTTCATTAAATTGTGGTGATTCCAATGTGAGTGGTTATCAAGTCAACA TCAAATAACATGAAGTGTGTTTAGTCGGCAAACATCACTTTGTAATTCTCTGATGTGTTTGGGTTGATTCCCTTCTTTC  ${\tt TGCTCTTTTTCTCTTTATAAAGTAAACATTTTTATTGCAAAGGTACTGCTATTGTTAGTTTCTAAAGGCACTTGTCATGG$ 35 TATTTATTTATTTATTTATTTGTTTGTTTGTTTTGAGATGAGTCTTGCTCTTTTGCCCCAAGCTGGAGTGCAGTGGCA TGATCTCGGCTCACTGCAGCCTCTCCCGTGTCCAAGTGATTCTTCTACCTCAGCCTCCCGAGTAGCTGGGATTACA GITGTGCACCACCAGGCTCTGCTAATTITTTATATTTTTTAGTAAAGACGGGGTTTCACCATGTTGGCCAAACTGGTCTCAA 40 ACTOCTGACCTCGTGATCCACCCGCCTCAGCCTCCCAAAGTACTTGGATTAAAGGTGTGAGCCACCGCGCCCAGCCTGTA TTTTGAGGCAGGCCTTAGGTCTGGCACCCAGGCTGGAGTGCAGTGATCAAGGCTCACTGCAGCTTCCAACTCCTG GGCTCAAGCAATCTTCGTGTTTCAGCCTCCTGAGTAGCTGGAATTACGGGCTCATGCCACCACACTTGGCTACTTGTTTA 45  ${\tt TTTGAAATGGAGTCTTGCCCTGTCCCCCAGGCTGGTGTGCAGTGGCATGATCTCGGCTCACTGCAAGCTCTGCCTCCTAGTGAAATCTCGGCTCACTGCAAGCTCTGCCTCCTAGTGAAATCTCGGCTCACTGCAAGCTCTGCCTCCTAGTGAAATCTCGGCTCACTGCAAGCTCTGCCTCCTAGTGAAATCTCGGCTCACTGCAAGCTCTGCCTCCTAGTGAAATCTCGGCTCACTGCAAGCTCTGCCTCCTAGTGAATCTCGGCTCACTGCAAGCTCTGCCTCCTAGTGAATCTCGGCTCAAGCTCTGCCTCCTAGTGAATCTCGGCTCAAGCTCTGCCTCCTAGTGAATCTCGGCTCAAGCTCTGCCTCCTAGTGAATCTCGGCTCAAGCTCTGCCTCCTAGTGAATCTCGGCTCAAGCTCTGCCTCCTAGTGAATCTTCGGCTCAAGCTCTGCCTAGTGAATCTTCGGCTCAAGCTCTGCCTAGTGAATCTTCGGCTCAAGCTCTGCCTAGTGAATCTTCGGCTCAAGGCTCTGCCTAGTGAATCTTCGGCTCAAGGCTCTGCCTAGTGAATCTTCGGCTCAAGGCTCTGCCTAGTGAATCTTCGGCTCAAGGCTCTGCCTAGTGAATCTTCGGCTCAAGCTCTGCCTAGTGAATCTTCGGCTCAAGGCTCTGCCTAGTGAATCTTCGGCTTCAAGGCTCTGCCTAGTGAATCTTCAAGTGAATCTTCGGCTCTAGTGAATCTTCAAGTTAAATCTTCAAGTGAATCTTCAAGTAATCTTCAAGTGAATCTTCAAGTGAATCTTCAAGTAATCTTCAAGTAATCAAGTGAATCTTCAAGTAATCTTCAAGTAATCTTCAAGTAATCTTCAAGTAATCTTCAAGTAATCAAGTAATCTTCAAGTAATCTTCAAGTAATCTTCAAGTAATCTTCAAGTAATCTTCAAGTAATCTTCAAGTAATCAAATCTTCAAGTAATCAAATCAAATCAAATTAAATTAAATTAAATTAAATTAAAATTAAATA$ 50  ${\tt TTGCAAGAAATAGTTCTTTTGGTTCTTTACTTTTCCATAAGGATTGAGTCTCAAAATGTCTGGTAGCATCCACTGCATTTT}$ GTAGGGGACAATAACAAAGAAGATGCCAGCAATATCTTCTATCTTTTCCAACATTATTCACCTCTCCCACCCAAGGACAA AGGTTTGTCCCATTTGTACTGACTCTGACCCAGGTTGTCATGACTTGAGACTCACTAGAAGTTTCAGAAAAATGCAGACT 55 GCTTTAAAAAAAAAAAAAAAGGGCAAGGGGAGGTGTGAGAAGAAGTATAATTCTTTTTCTTATCTGGAGATATAAAA ATCATATAAGCATGATTTATGATTTGGAACATTGTATTTTATGGTTGCAGAGCACACGTATCATCCTATCTGCTTC TGACACCCAGTAAGCAGCTCTGGCTTTTATAATTTTGATGAAAGAAGTTTCCCCAACAGTATTTCGGTGTGCATGCTCACA CACCAGCCCTGGTCGTCAGTGAACAGATTCTTCCAGGTCTTCATTGTGGCGGAAGAAAGTGAGATCAGAGATCCCGAGGA AGGGCTTCAGTTTCACCAGTAGTGGAGCTAGGGGAGTAGGGGGGGAAGCCGCAGGAAGTCAGTGCAGGACGCCGGAGGC 60 CACTCCTAATTGCTTCATGTGTTGCTGGTGCTGGATGACCTTGGAGGCGCTGCTGGTCCTGGATCCTTGCGACCTTTTC TTCCAAGAGGAAATGTGGTGCTGAGCCCCCCTTCCACTGGCTGACAAAGAAGGACCCCTCATGTGGGGGCCTAATTCT AGTGAATCCCCAAAGGTACATGTTGAAATAGGGAAAAGGCCCCAGGTGAGGCTGTCTATGTAATAGAGAAGATCCATTGCA AACAGGTGTCCCCCAGATTGGATCCTCTGCTCTAGGACACATTCTTGTCCTAGAGCAGGTTGGGCAAGAGGCTTTTCTCT 65  ${\tt CAGTCACCAGCCCCAAACCCTGTGGTCTTGCCAGCCCAGGACGTGTCAAGACTGCAGCCTTTGCTGACCTGTGACCATCT}$ CCAAGTCCATGCCCAGGCCCCTACTAGGAGTTGAGGGCAACAGGGGCAGTGGGTCTCTCCTGCTTAGGAAATTTGGGTTG GGGCAGGTGCAATGGCTCACGCCTATAATCCCAGCACTTTGGGAGGCCGAGGCAGGTGGATCACCTGAGGTCAGGAGTTC AAGACCAGCCTGACCAACATGGTGAAACCCCCATCTCTACTAACAATACAAAATTAGCTGGGTGTGGTGATGCACACCTGT

AATCCCTGCTACACAGGAAGCTGAGGCAGGAGAATCGCTTGAACCCAGGAGGTGAGGTTGTGGTGAGCCGAGATCATGCC CACACAACCTAAGGACAACTTTGAATCAATTCTTCTAAGCTGGTAGCAGAAGCCACCTTTCCATTTGACTTCTATCTCGC CAGCTCACTGCCACCTCTGCCTCCTGTTAATCAAGAGATTTTCCTGCCTTGGGCCCCTGAGTAGCTGGGACTATAGGCCATC5 CACCATCACACCTGGCTAATTTTTGTATTTTTTGTAGAGGTGGAGTTTCGCCATGTTTGGCCAGGCTGGTCTTGAATTCCT ATCTCTTAATGAGTTTAACTACATTTAACCATGTATGTGTCAGTCCTACTATGCACCTTACAGCTCACTAACCCTGTTTA ATAATGTATGTTGCTACATTTAATCTTTATGGTAGCCTNCATGAACAGGCTCTTATTTAGNTTCAGTGGTTCTTGNATCA 10 GGAGTGATATTGCCTGCCAGGGAATGCATGTCAATGTCTGGAGACATCTGGGGTTGTCAGTTCAGGAGGGTAGAGGATAG CACCACAAAATATCAGCAGTGCCNGAGGTTGGGAAGCTCTNGTGCCNATTGTGCAAANGATTCAAGGTGGCTATGTCACA CGTAATCTCGGCTCACTGCAAGTTCTGCCTCCTGGGTTCGAGCCATTCTCCTGCCTTAGCCTCCCGAGTAGCTGGGACTA 15 TGTTAGCCAGGATGGTCTCGGTCTGCTGATCTNCGTAATCCGCCCACCTCGGCCTCACAAAGTGCTGGGATTACAGACAT GAGCCACCACACCCCCCCTACATGGGTATTCTAACCCAGTCTAGTGATAGTCCAACCNTNCCTGTACTATGAGTAATTAN GCAAAGAATTAACAGCAGAAGATCGCTCTCACCAAAGCCCATCCAGAAAGTGGCTCGTATTCAAGGTGCTAATTAGGGTG 20 AAAGTAGTGGTAAGTGGAGGTAAGAGAATGTTTTTTGCTTTCNGGGTACTAAGTNCATCGTTATAATNAAACACACAGTAA ACCCATTTANTCTCAGGCTTAATGCTTTNCTTGTTTCTTCTNAAGCACTTCTTAGGTGCCTCTGGGCTTTTTÁACATTCT TTGGCAGTTGTAATTTATTAATTGATTTTTAAATTTGGCCGGTGAAAATGAACTTTAAGTAGGGGTTTGAGGAAAATGAA NCCTCAGCCNATCTTGGNATTCCCAGCTTANCTCACATCATAGATGGAGAGTCAGTTGTTTAGANAAAAACTTTCTTTT 25 GCCGNGAGTACAGTGGCACGATCTTGGNCTTACTANTAGCCTTGACCTCTCGGCTCAAGTGATCCTCCCACCTCAGCCT  $\tt CCTGAGTCACTGGGACTACAGGTGCACACTACCATGCCCAGCTAAGTTTGTTCATTTTTTTGTAGATACAGGGTCTGACNT$ GTATTGCCCAGGCTGGTCTTGAACTCCTGGCCTCAAAGGATCCTCCCACCTCAGCCTCCCAAAATGCCGAGATTATGGGT 30 AAATGCATTCTCACATAACCTCATAGAAGTGAGCCCTCTTACTGAATTATGTGGCTGGGGTTCTTGGGTATGTTTTTGTTC TATTTTCTGGTTGGTGGTTTTCTTTCTGTCGGGTCCCGTGGGCTCTTTTTCGACCTCTTCTCAGAATGTTTTTCGTTTTT TTTATTTTTTGAGATGGAGTCTTGCACTGTGTCCTGGGCTGGAATGCAATGCCAAGATCCCTGCTCACTGCAACCTNCCG 35 ACCTCGCCTCCCAAAGTGCTGGGATTATAGGTGNTGAGCCACCATGCCCAGCCCTCAGAGTGTTTTTAAAATGCATACTA TTAAATACCTAGGATTATAAAGGGAGCCAGCTATACTTACATATAGTTCTCTCTGTGACCCTGTAGAATGCACTGAAGCN AAAAATAACAGGTAATGCTAATCATAAAGTTTTACAAATCTCCTGAAGAGTCTTGTTGGTTTCCTTGATGAAGCAGG TGAACTGCACTCTTTGAACCCCCTGCACTCCACCCCTTCTGGGAGGAAGCATGCAGGTGCAGGTGCAGGAGCCAGGG 40 TAAATGCTTTTGGGCACTGGCAGGAATGAACTCTGTACTGGCCCTGGGATAGCATCTGGCAGGGGATGCCCCTTGACCCCT GAGGGTCAGCGTGACAGCCTTTTTGCACCCACATCTGGGTTCTTGTCCAGTGNTCCAGGAGGAATGAGGTCTCATGAGCAA ATTTTAAGGATGCCAAATGTGGGGGATTTTATTGCTGATGAAAGTGGCTTTCACTGGGAAGATAAGCTAAAAAGAAGACA AAGNCAGGAAGTAATTTTCCCCTGGAGCTATGCCATCAAGCTGTTCTTCTGAAGTCCAGCCGCTTCTCTCCAACTGTGG 45 TCTCTAATTTCCAGCTGCTTCTCCTCTTTTCTTCAATGTGCCAGCGGAGCCTGGGGTTTTTTATGGGTACAGGATTGGGGG CAGGCCGGCCATGGGTGGNTTGTGGAAAAGGCAATATTTGAGTGGAAAAACAGGGATATATGTTCTCACTTTGGGCCAC TTGATACCTGCAATTCTTTGTACATATGAAATTTAATATGGTGAGATTGGTCACCTCTAGCTGCTAGAGATAGTGCTCA TAATAATTTTTAACATTGATTGAGTGTGGATAATAATCCAGGAGCTGTGCTAAACGTTTTACAACACATTATCTCACTTA 50 AATATGGAATTGGAATTTCAAAGCAATCTATGGTCTTTATCACTTCTCCATTAACTGTCCTTGTTTTATTAATGCTGATT ACTITITIGATITIGGITICGITICTITIGGGGTTGTTTGCATTTCGTGAGTCTTTGCGTAGAGAACCTTGCTAG 55 ATTICCTTTTTGTTTTCCTTAGGATGAGAAGAAGGAGCCGTGGAGCCCTTTTCCTTAGGTTAGAATGGTICTGTTGGTTG AATTGTGCACCCTGTTTGGTTGAAACAATTGGACAGTAAGGATGTGACTATTATTGTTGCTCTAATACTTTATTATGT CATACCAAAAATTATCTTTTGTATTTTGNCTACCAGTTCNTTTTAGNTTTCTCTTACNATGTANTGAAGTTNGGATAGNT TAGAANTGAGATGAAAATAAATNGGGCTGGCGGGGTGGCTCATGACTGTAATCCCAGCACTTTGGGAGGCTGAGGCAGG TGAATCACTTGAGGTCAGGAGTTCGAGACTAGCCTGGCCAACATGGTGAAAACCCTGTCTCTACTAAAAATACAAAATTTTT 60 TTTTGTATTTTGGGATTCGGTTTAGGTGATGTGTGTGTAATCCCAGCTACTTGGGAGCNCTGAGACAGGAGAATCACT CTCAAAATAAACAAACAAATAAATAAATAAAATGTTTAAACCTGCCAACTACAATAACTTTTTCAGTCTCTTTCCCCC TTTCCCACCTTCCCAAAAGGGTGGGAAATTTTTAAAGTAAAGTAATAAACAAATAAGTTTTTGGGTTGGGCGGGAGATTAG TCTGTTATAAAATCATGTTTTWTATTGAATTACATTTTAATATTGGTATCACTTTAAAATGAAAATGAGTACTTGCAAAC TGTATTTTTGAANGGAGTTGGGTGGTGGGGGGGATGCCATTTTGGCAACAGATGACTTCNGGTTNCAAGTCCTCTCT 

ATACTAGCTAGGGTGTTGATAAGAAACAGCAGGCATAGTTACTGGGTGATTGAGAAGAGTTTAACAAAAGACTATATTAG TCTGTTTTCATGCTACTGATAAAGGCATACCCAATACTAGGTCATTTACNAAAAGAAAAAGGTTTANTTGGANCTTACAG TGTGTAGGGAAACTCTCCCTTATGATACCGTCAGATTCCTTGAGACTTATTTGCTATTGTGAGAACACCTTGGGAAAGAC 5 GAAGCAAGNAGTAGGANGGGAACANGATGCTTNGGATAGGGCAGGTGAGTCACAGGCTGATGGGAGCTGCCACCGTCAGT A GAGGTCCTGATGACCTGGGAGGGGGGGGGGCCAGACAGATGGGAGTATCCTAGCCTCAGTTCCTTTCCATCCTCAGAACT $\tt CCTCCCAGTGCCTCTCAATGGCTAAACCAAACGTTGGAGCTCAAGGAAGCTCCTGAGGCTATCTTTACAGGTCAGCTCAGCTCAGCTCAGGGAGCTCCTGAGGCTATCTTTACAGGTCAGCTCAGGGAGCTCAGGGAGCTCCTGAGGCTATCTTTACAGGTCAGCTCAGCTCAGGGAGCTCCTGAGGGCTATCTTTACAGGTCAGCTCAGGAGCTCAAGGAAGCTCCTGAGGCTATCTTTACAGGTCAGCTCAGGAGCTCAAGGAAGCTCCTGAGGCTATCTTTACAGGTCAGCTCAGGCTCAGGAGCTCCTGAGGCTATCTTTACAGGTCAGCTCAGGCTCAGGCTCAGGAGCTCCTGAGGCTATCTTTACAGGTCAGCTCAGGCTTCAGGCTCAGGCTCAGGCTCAGGCTCAGGCTCAGGCTCAGGCTTCAGGCTCAGGCTCAGGCTCAGGCTCAG$ 10 TGGTGGCTCATGCCTGTAATCCCAGCACTTTCGGGTCAGTTGAGTCTAACATAGGGGTGTCCAAACTTTTGGCTTCCCTG AAAAAATCTCATAATGTTTTAAGAAAGTTTATGAATTGGGGTTGGGCCAGATTCAAAGTTGTCCTGGGCCGCATGTGGCC CACCAGCCATGGTTTGGACAAGCTTAGTCTACAGGTTCTTCAAGAGGGGCCTTGAGCATTTGAAAGACTTCTAGTGGGAGA 15 GATCACAAGGGACAAGTAGAAAATCCTGGGCTGGCCTGAGAGGCAGACCTGTGATTATTTTGCTCTTTGAAAGTTGTCCT TCTGCACCCATTTTCCCCAGACCTAACCTCGATTTGTGCTCCAGGTCTGAGCAGAAATGTTATTCCCTCCAAAAAGCCTT CCCTGATGTTGAGGGATGAAGTGTAGCCCCCTTCCCGANTGCCCCCCAAGAACTCGCTGGTTCTCGTCCTCGCCCTCAG GTTGGATCCCCAGTAACCAGTACAGTGCCAGATACAGAGTAGTAACCCTACATTCTAGCGTAGGCAAATATTCTAGTATT 20 TGCCAAAACTAGAGGATGAATGAGTGATGGGTAAGAGAGTTCTCAGAAAAATGGATATAAACAATATTGTAAATCATATT TGGAAAATAAATACTAGAATCATTGAATCCCTGAGTTATAGAAAAATTTATTAATAGCGCTATCTGGCTACTTTTTAAAAG TGTGGACATCCTCGATGTATTAGCTATGCATCTGTGGATAGGAGGCTTACCCACTCTGAGTCTTGTCAAATACCAAACAC AGGAAAACAATATCTTCCTGAGAATGTTGTGAAGAATATATCATCCAGTCAGAGTGAATCAGCTTGCCCCAGTGCTTGGCA TATAGCTGCTCAAGAAATATTAGGCATTCTTTGTTATTATAAATCCCCTTTGTATTTTAAAACCCTCATGTATCACTGAA 25 TCAGACGTCCACAGCATCTCATTTCTGCCTTTAAAAAATTTCAAGAGTGGCATTTTGGCATGATTGGACTCACAGGTGGA GAAGGTATGACAAACATTCTGGAAATCTTGGAAGGTGAAATATAGGGAAGATGGCCCCCTATGGAGGTTCATTGTCCCCCA CCTTATTCTAAATAATGACTTTCTTAAAACTACATGTTTTGGGGGAATGTCCTGCAATATTGCTTTACATCTTTTTATTT TTTTATTTTATTTTTTTTTTTGAGACAGAGTCTCTGTCTCCAGGCTGGAGTGCAGTGGCACAATCTCAGCTCACTGCA 30 ACCTCCACCTCCCGGGTTCAAGCGATTCCACTGCCCTGATCAGCTTCCTGAGTAGCTGGGACTACAGGTGCGCGCTATCA TGCCTGGCTAATTTTTTMGTATTTTAGTAGAGACTGGGTTCCACCATGGTGGCCGGGATGGTCTCGATGTCCTTACCTCA TGATCTGTTCGTCTCAGCCTCCCAAAGTGCTGGGATGACAGGCATGAGCCACCNGCACGCAGCGTATTGCTTTATATTTT AAGACTATACACTGATATCCCCGAGCCCCCAAGTTCCTGTCCGCTGGTAGAATTCACAAAGCTGGTTTTATGTCTCCTTC TCTTCCTCTTCCAGTGTTGTCTTTTCCCTGCATTGAGATAGCATTGCATGGAGATCCTTGTACTCCTCGAACAGAGGCTG 35 CAGATGGACACAGGATCTGCTCAGGGAGATAAGATCACCTGCTAATTCTGCTTTCTCCATCAGAGTNCTGAATGATCAGT GCTGCTTTATCTTCTCCCATCTCCTTACAGCAGCTCCAACTACTGACTTTTATTGTGTGGCAGCTAATTGTAGGATTCT ATTTCTGTAAAGAGAAGGCAAGAGGGAATGCAGTGTCCACCATCCCTGCAGCCCTTTGGCGCCTTCCCCCTCCCATTAC CTTGAAGTAGAGGGAAAGGGGACGACAGAAGAACCCTTAGAAGTAAGACTTTTTCTGTCTCTGATGCCACGGACCTTTGA 40 AATATTTTTTTGAAAAGAAGGCCTCCCTTGGCTGATACCTTCTGACTGTTAGTGAATAAAGGAAGTTTAAACAATCTCTT CCAGTGCTGCTCAGAGGTATGACCTAGAGCAAGGGGTTTAGGCTTTCTTGGACTCATTTTCCTCGGTGGTGAAGTGGGGA TAATTTATTGACAGTGGACCGTGAGGTTCTGCGCACAAAATTCGTTGCATAGCACCTGATACACAAAAGCTTTCAGGCA 45 AGGITAGTITICGGGTATITICCAGCCTTAGTCTTGGCTGTGGGAGCCATAATGGAGTTGTTCAGAAGTTTACAGCTAGTGT  $\tt CCCACCAAAATGAAGTTTTAGTGTAAATGTCATGTAGATTTTAACCAAAGGTTGATTGGAGGGTCTGAGTTTCTCAGCT$ 50 GGGTTCTCTCNGCTTTAGGTCCTCTCTGGAGGTGAAGAGGGAAGTCCGCTGATTGTTTTTCTCTTGGTGCAACTTCGCA CCACCCTTACATATCCCAGTGTATATGGTAGCCAAGGACAGTACTGTTTGAGCCTCCCCCATTAAGTGTCAACATTGAAT ATGACTATGAAAAGGGAAAATGGAGGAGAATGATGACGAAGGAGGAGGAGGAGGAAAAGGTGACTTGCCTCTAGCTGATG 55 TGGATTATTTCTCTTTTTTAATTTCCATGTCTGCGTAGCTTCATCATAGATCTCAACTTAAGGACAATGAAANGTCGTTT AGTCTCACTCTGTCACCCAGACTGGATTGCNAGTGGCACAATCTCAACTGACTGCAACCTGCACCTCTCAGGTTCAAGCA ATTATCAGGCCTCAACGTCCTGAGAAGCTGGGACTACAGGCATGTACCACCACACTCAGCTAATATTTGTATTTTTAGTA GAGGCGGGTTTTGCCANTGTTGTCCNAGGCTNGGTCTTGAACACCTGACCTCAGGTGATCTGCCTGCCTCAGCCTCCCA 60 CCTGTCTCCCTGCCTTCCCTTCCATCTGTTTGTTATCTGACTTAATCTTTGAAATAACCCAATGATACATGATATGCATTT TCTAGGTAGATGAAGGGTTAGGAAGATGTAACTTGTCCTAAATCACGTGTCTTCTAAGCGGTGGAACTGATTTTCT CACTGACTATAGATGTTGAGCCCATTACTGTGATACCTACTGCCTTTTAAATTTTAAAAGTTCTCATTGTTTTATCGTTTT CATCATTATCATATGATTTACCTCNTTCTCTTGTGTCTTATAATCCNGATTGGTCATGCTGACATACTAAACCATATTGT 65 TGACAACTGTCTCGGGGGCTGGAGTTAGAGCCAGGGTCCCAGCTGCCACAGTTCATGTAGGGGTAGACCAGTGCTTCCTT TTGGGTGATGAGGAAGCTGGATTTGGCAGCTGGTTTTGTCTGGATTTGAAAGGGAGGTAATCAGGGGTGTGCTGGGAGGG  $\tt CCAGAACGNATCCACCCANCGTGTTGGTGCCACCCGGCAATGGAAAAGCNCTCTGGCCTTCGGCCTTCTCCGGAAGGTTGT$ CCGCGTGCCAGTGAGAGCTGCTTTTCACCNTTACAGCAGCCCCGGCCTATCTCTCAGGAGGNCCTGCTGATAATNCAGT

A AATGAAATTCACCTTTCCCCGATTCTTGAAAACGGAAAAGATGAGGGTTGAATTATAGGGACAAATCATGAACACTGTCTTTTTTCCAGCATGGTATTTTGAGCGGCACAGAAGGGGGTAATTATTTTATTTTGGAAGAANCAAATTTAAGTTTGCCAGT TACCTGAAAGNAAATTTANGTGATTGNCCAGTCCATTCTCNTAGCCTTNCTNNNGAAGAAGATAGATTGTAANTCTTTA 5 TCACATTATTTTGGATGTNCTGGGTTGCACCTGNGAAGCTCAGATAGCAATNATCTAGGCACGGCTGCCAGTNGCTCTA TACATINCACGTTTGTTINAATATTTTAANITTCCCCATGAGTCTTINAAAACCTCNTGCGTGTGCAAGTTGAGGCCT GGTGTATGCACTTCGGCCACGGGCTTTCCCACTGTAATGAAGATGACTCCATGGATGACCTTTCCGTGCCTTTTGT NCTGTAGCCTCCCTCTTTAACTGAACACCTTCCAGACGAGCATGCTCTGAACTCCTGAACTCCTCATTCTTCTTCTC TGAGAGAATTGCTCAAGCTGCAGTTTATCATTATATGCCTCCAAAGACTTTGTGTTTCCTGTGTTTTGACATCGAGATAGA 10 ATTTTTCATAACCCTTTACTAGTAATAAATTTGATTGTTAAGGGACCGGGTTAATCTTATTTCTAATACCAGCATCTNGA TTTTAAAACCCTGANTTTAGGAGCATTTTNCNTTTNCTGCTACCTTCCTAAAACGCANTGGGTGGAAATNGTATAAAATA TGTCACCTGATATTGGAGGATTGTTTATTTCTGTTCATTTGGTCCTGAATAGTACCTATGAGATGCATTTGAAAACCTTAC CTTGTTTATATGTTTCTTTCTGTTGCAATTTCTTCCATTACCTGGAATAGCTTTGGACGGCAAACCAAGCAANTGCC CTTTCACAGGTGTNGGGANIGNAATGGGGAAAGAGTCTTGGTNAAGGNAAGCAANTTCAGAGAACATGGAAGCATCTCA 15 GTGTTCAACTGAACTATGGTGGTTAGGTTAGTAATTAGATGCACAGACAAAATCACAGGAATCTGCGTGAGCCTTGTCCT ACTGGTAAAGGAGTCTTGTGAGGATTAATTGAAATAACTCGCAAAAATATCCNAGCTCTCTGTTTCCCTGCTAGGGGCTC TTGTCATAGGAGCCATTGTTGTAGCCTTAGAAAACATACGGCATTATTTTAGGGGGGAGAGGTTAGAGTAGAATTTTAAAG 20 TTGTTGACAGAAGTAGGACTTCAGGTCCACATATATTTCATTGTAGAGTGCACACATGCATTTTTAAGAATTTCCCGATT TGCACCTTGCCAGAACATGTTTTCCCTCTAAAGAGAGGCAGCTGATAATTAGTAATGCTAATGTCGGGGTGAGATGCAAT AGATAATCTAACACCAGCAATGATGCCCAGAGCATTTATCTTTGATGCTGGGAATGCGTTCATTTTCTTTATCTTGCCAT 25 ACATTCTTTTTCCACCCTCACACTTTTTTTAGCTCCGATCTGTGTTTTCTAATTTCTGCCTGAGAGAGTGAAATATTCANTA TATITAGGTATAGTTAGAAAAAGCAAAANINGGTAACAATAGAATCTTGNATGGGATTGATCTCCTGCAGCAAGGNAGCA 30 ACAGAAAAAAAAAAAAGGGAATCAAGAANCCCAGNGTGCTTTTTATAGGTTAATTGTGCAGGGTTATCATGTATCTNCT TTAAAATCACCATCTTGATTCTGAGCTTTGGTTCTACACATTAGAATTGTTGCCTGGGCCTGGATTTTTCCCCTTGCATG TTGCGTGTGGTAGTCCAGCACATTTGCTGATTGCAAATATACTTGTCTCTTCTCATGGGCATTACTAGTACTCAGGAAAT CATTGATGTGGGGTAAAATGAGAAAAGGATTAGTTTTATTTTGGACAGATAAACAACATGTCATTTTACCAATTGCTCAT TAATGCTGATATTTCCCGTGGGTCTCTGACTCTGAAATCTGCATGGAGTGGTTACACCCTGGGCTTGTTAGCTCCTACCT 35 CTTCCCACCTCAGCCTGAGTAGATGGGACTACAGGCATGTGTCACCACGCCTAATGTTTAAAAATTTTTCTTANGA GGTAGAGCCTCACTTTGCTGCCTAAGCTGATCTAAAACTCCTGGCTTCAAGTGATCCTCCTGCCTTGAGCTCCCGAAGCG  $\tt CTGGGACCAATAGAGATTTCTCTGAGAATTAGGTCCCCCACTATTAATAAGGTCATTGTCAGCTGAATTGGGGAGGTGGC$ 40 GTGGGTAGATACAATTAANITTAGAATTTTTAAAAGGCTTTTGAGAATATTCGGAGAACCTAATATAATTTGAGGACCTG ACATTTATTTINAAACGTGAAAAGCAATTTAGAAAATTGCACATACTCTATAAATACACTTCTGTTATAAAAAATAGACAC GTACGGCCGGGCGCGTGGCTCACGCCTGTAATCCCAGCACTTTGGGAGGCCGAGGCGGGGGGGATCACGAGGTCAGGAGA TCGAGACCATCCCGGCTAAAACGGTGAAACCCCGTCTCTACTAAAAATACAAAAAATTAGCCGGGCGTAGTGGCGGCGAC CTGTAGGCCCAACTACTTGGGAGGCTGAGGCAGGAGAATGGCGTGAACCCGGGAGGCGGGGGGTTGCAGTGAGCCGAGAGC 45 TACACAGACAAATGTTCTGACAGAAATACACTGAGATATCTACAGTGCTTCTCTCTGGATAGGATAGGGTATAATTTAAT TGTTTATAGTTAAGTTAÄTGAACTTGGCCAGACAGACCTGGGATCAAATCCCGCCTCTATCATGAATTGGCTGTGAGGTG TGACATTGAAAAAGTGATTTAGCCTTTGTTCCCCTCCAGGTCCTTATCTGTAAGGNTGGCAGTTACAATAATACCCACCT CCCAGGGTTATATGTCAATGGGTTAGGCACAGACCTAGGAACTCAGCAAATGGACTACTATGAAGTATTAGCTTTTTTACT 50 GTTTCTGGTTTTCTGATTTTTGTCTCCTGTTGTGAACATACGTTCCTTTTGTAATATGAAAAATAAAAAATAAAAGTTAA ATTTGTTTTGTTTGTAGAATCAGTTGAGGACAGATGGGACTATTTGCATGGTTGGAGTCATGTTTGAAGTCAGTTACC TAGGACCTGGACTTAATCTTCATGATGTTTGTAAAGTAATACTTCTTGGAGAAACCNTCCCAAATTTCTATCGACACTAG ACATCTCAGGATTTGAAAATGTTAAGCTAACAAATTGTTCATCAGGTGTATCTCCAGCCNCTTCGTAAACACTGCCGGATG 55 GATGAACCTACGTAATGATCTCCTGGTGCCATTTTCCTGACTGTAGATACTTGGGTAAGGAGGAGACTTTGACTCTAGAT TGTTTTTTTTTTTTTTTTTTGTCAGTAAACTGAGACCAAACCACATTGCTTACTATTGTCAGGGAATGAAAACTATGCAACAGA AGCCGATGTGCAGAGGTGACCGTGTTCGCTGGAATTGAACTTAAGCAGGTTCCTACCGCACAGATCCACACAGGAGGGGAT 60 TGCGTAATGCACCCAGCAGAGTTGTGCTCAACTGTGATTTTATAAAAGACACAGAAACACATATTAAATAGACAATTCTT CTATCAGCCCTCTAAACTNGGCATAACCTTGAATCATAATTCAATGAATGCATTTCTGTGAGAAGTGAAGGTAATAAGCT CCAAGTGCTTTCGTTTCCTTTCTTTCTTAATGCAGGGAAAATTGAGATGGGATTCTCAGTTAAAACCCAAACGACG GGCCTGGGGGTTGTCACAATGTGATCCCTGAGGATGTTAGCCCCAATGTCTTTCTGTAGCCAGAACCAATAGAAAAATGA GAGGAGGAGAGTAGAANCCAGAATAGCAAACAATTTTTCCTTTCATCGTCTACCTGTGTGACTGTGTATATGTCCAGAAG 65 GGGATGTGGTTGGGGAAGGGCATAGTACACATATTTGAGCAGAGTACATGTTTCATTTCTTGCTCATACGACATGTCC AGTGTGGGCTGGCATGTTCTTCTGCACAGTCCCTGAGGGACCCGGACTTATAGAGTCTGTGATCTCACAGCTGCTACATC TGGCACAGATGGCCTTCTTGATCTCCAGTTAGGGCGAGTCACAACAGCAATTAAATGGTTTGGTCTGAAGTGTCACGAGT CGTTTCCTCTTGGCTGCCTACTGGCTAGGCCAGTCACGTGGCCCTGAAGAGGGTGGGAATGTCTCATCCCCCTGTGGGCT TAGAAGAAAACCAGAGGTCTGTGCACACTATGGATTTTTACTACAATGATGCCCTTTCACATACAGCGAGAAAGATTAAG

AGGTACTGAATTGGTGGTTAATAAAGTCAAACTTGTGAACAGAGCAAAAGGGCATTGCTTGGTCATTGCAGCTTCCACCCATGCACCTTACACAGAAGTTTGGGCCCTAACATGGAAACTTTTCAACACTGGCCAAATTCTGTTTGAAGCACTGTATTGA GGCATACCATATGCTGAAAGACTTGGAATGCAAAAACCTAAGGCCAAGGGCACTTCTCAATATTAAACCCCCAGTTGTAA 5 AGAAACCTGTGAGATCCCTTGAATATACTGACAATACACTGATGAGAATTGAATGCCCCATAAATTGCATCTCCCGCAGG GCCTGATAGGTGCCCTGTCTTCCTGCTTATGACTCTGAAACCCTGTTTATTTGTATCAAGGACGGTTGGTACTTTAATCA AGAATTTGTAGATAGACTTACATCCCTCAGTTTCAAAGCTTCTAGTAGTAGGGCTTAGAGGTTCCTAGAGTAGGAAAAAGC 10 CATAATCTCTTAATATTCAGTGAATAAAAATTGAGTTTTGAGAGCAAATATTTTGGTAGGAAATAGAGAACTGACACTA  $\tt CTAAAACCTITATIAAGTAGACATAATCTICATCITATAAAGTAGTCAGTICCTCATTIGCAGATGAGGAAACTGGCTGA$ CTGAGTTAAATGAATGCCAAAGTCACAGAGCTGCTGAGTGGCAGAGTTGTAATTCCCATGCAGAACTGTGTGGCATCAAA 15 ACACCTCTAATTCCAGCACTTTGAGAGGATAACTTGAGTCCGGGAGTTTGAGACCAGCCTGGGCAACAGAGCCAGACCAT CTATCTCTACAAAAAATTTAAAAATTAGCTGGGTATGGTTGCACTCCTGTGGTTCCAGGCTACTCAGGAGACTGCGGTA GGGGGATCACTTCAGCCCANGAAGTTCAAGGNCTGCAGTGAGCTGTNGATCGCTCCACTGCACTCTAGNCATGCGTGACA GAGTGAGACTANTCTCAAAAAAGAAAAATGAGATTATGGCCAGGGGTGGTGGCTCCTGCCTATAATCCTAGCCCTTTGG 20 GAGGCCAAGGTGGGAACATCATTTGAGCCCAGGAGTTAAAGACCAGCCTGGGCACATAGTGAGACACCAGCTTTACAAAA GAGAGAGAGAAAGAAAGAGAGAGAGATTATTICTAGAATNAAGCAAACCAAACGTGAATTAAGTTTTCATTCTCATTT ACTGGTACCACTGTGGCCAGGGAGTGACTGCAAAGGGTCAAAACTTTTGTTGGGGGAGCTGTTTGGACTAAGTGAATGTCCA GCCCCAACTCAGGGATGTTGTATTGGTTCTAATCTCTGCTTCTGAGGAAATGGTTACCTGCAGGGCGATTGTGGCCTGCT 25 TTATGTTGCCCAGGTTGGCCTCAAAGTCCTGGGATGAAGAGCTTCTCCTGTCTTAGTCTCCTGAGTAGCTGGGACGACAG GTGCCTGCAACCATGTCTGGCTTAAATCCATCCTTAAACAAGTTCAATGTTTATTTCCTTCAGATAAAATGAGAGTGGA GAGACCNACAGTGATGCCCAGGAATAGTCATGGTTGGCGATTAAANTAGCCATTGAGTCTCTATTCTGAAACAGGCACCG 30 CTTGCTCTGTCCTCACGTGGCCTTCCGTCTGTTTCTTNGGTGCACATCCCTGGTGTCTCTTCCTCCTCTTATAAGGANCA  ${\tt CCAGTCCTCTTGGATTAGGGCACCACGCTTATGACATCATTTAACTTAGTTACCCTTTCAAAGGCNTTTGTCTTGAAATA}$ CAGTCACATGGAGGTTAGAACTTCAGGATATAAATTTGAGGNGGGACGCAGTTTAGTCTGTAACATGCTCTATGCTGGG CACAAGGAATGTTATGGTGGATAAGGGGAAAATGGTCCCTACCCTCTGTCAGTTTTTTATGGAAGAAGAAGAAGACGGTCTT 35  ${\tt TAAAGAAATTCACATAATTAATCACAAAAAGCTAATACTATGACAAAGAATGTAAGTTACTAATACAGCTTAGAACAGAT}$ GACTCTAACCTTGTGTAGGAGCTAGAGAAGGCTTCTCTGAGGAGGTGAGGTTGGAACTGAAGCATGAAAGGGAACAGAAG GGGGTCAGGCAGGAGAAGGCTTGGGACCAGGAGGTAGAGAAAACAGTAGTGTGATCAGAACTTTAAGGCCCGGTTCTGTA TACAACAGGTTTCGGGACTTGAAAGGCAGCCCACATTGAGTGTAACTAGAAAGTGAGGGCAAGAGATTGTTCAAAAGAAT ACTGGACCCAGAGTTTCATCACTTTGTTAATTACATCTCATATTGTGGGATTGCAATTACCTTGCCCCAAGAAAAGATTAT 40 TATTTTTAAAATATAAATTCCTAGTCCCACTCCCTAAAGATTCTGAGTTAGTACATTCAGGATGGGGTCTAGGAATCAGT GTGTTTAAGAAGTGCATCAGGTTCTTCTGGTACTGATTGTCCATGAACCACACTTTGAGAAAGCTCCATCTAAAGAGATA AGGCCCGGTGGCTCATGCCCCGTAATCTTAGCACTTTGGGAGGCTGAGGCGGGTGGATCACTTGAGCCCCAGGGGTTTCAGA45  ${\tt TCAGTCTGGGCAACATGGTGAAACCCTACCTCTANCAAAAAATAGAAAAANTTAGCTGGGCATGGTAGTGCCTGT$ GGTCCCAGCTACTTGGGAGGCTGAGGTTCGAGGGTTGCTTGAGCCTGGGAGGTCAAAGCTGCAGTGAGCCAAGATCATGC  ${\tt TTTGTGTACATCAGCTCTTTCAAATTAATACAATTCTACTAGAGGGGACACTATTAGTATCCCCAATTTACAGATGAAAA}$ 50 AAATGAGGGACAGAGGGTTAGATGTGTATCTAAGGTCACATAGCTCACAAACGGACACAGCATGCACCCAAATGCCAGG TTTCAATGACCCTGTGGTGAAGTGTGATTGCTGGCATTTGCCTAGTGTTGACTGTGCTCTAGACACTGTATTAGTTACAA GTGATTCTACTTCATTCATTAGGCCATCCAGAAAGCCTTGTGCTTTAGTCTGTCCTGGCTACTATAACAAAATATCAT AAACTAGGTGGCTTATAAACACCTGAAATCTATTTCTCATAGTTCTTGAGGCTGGGAAGTCCAAGATCAAGCTGCTGGCA GATTGAGTGTTTGGCAACGGCCCACTTTCTGGTTCCTAGATGTTCACCTCCTTGCTATGTCCTCATATCGGGGGAGGGGC 55 AAAGGGTCTCTCTATCTGGCCTCTTTTAAGCCCTTAACCCATTCATGAAGGCTTTGCCTCAATGACCTAATCACCTCCCA  $\tt CCAGCACTTTGGGAGGGCTGAGATGGGCAGATCACTTGAGGTCAGGAGTTCGAGACCAGCCTGGCCAATGTGGTGAAACCC$ 60 AGTACTGATGTGGATATGATTTGAGCTAAGACTCTGCTGTTGATTCTCTTCAAAAACTTGGCAGTAGCCCTTGGATCCCA ATGTGACTCACGCAGAGCAGAATCCGAATTTTCTAAGTGATGAACATGTTAACATATTATTTTAATCTAAAGACATCCTA TCCCTGAATTTAGGGGGGAGACATTTTTTAAGTAAGGTTTATTTTTAAAATTGTTTTGCAAACATTTTAACAGTACATCA 65 CTGCCTCATTGGATGAATCATATTITTAACTTTCACTTCCCATCAATTTAAACATCATCTCTCAAGGAACTGATGGGCCG GTTGACTCTAAATGATTTTGCCTTTCATGCAGTATTGTTCCATCCGCCTGCCACAGAAGTGATTCCAGGTCATTCCAATT TATTTAATTTAATTTTGGAGATGAAATTATTTTGCCCCAATAACTAGAATGCTAATGGGACTTAGTGTAATGGTTTAGTTCA GGTTTGTTGGTTTGAAAATAAACGCCTTCATTTCAATATTTGCCTTTTGGCTGCAGCCCGTTAACTGGTCACATGCTGTA  $\textbf{ANCCTCATTAACATCAAGGCTTAATTGTAAGTTAATGTGCACCTAGTTTTTGTAAAGAAGGTTTCTTATCTTAACTGCCAA$ 

TTAAANCATCATANCTTTTATCGGTGCCTTGATAAATAAATATTTGAACTTTATTTTTAGAAGTTAGAATAAAGTGAGGAAA ATAAATCTCAGCTCTCTAGAGTGTCACTGTGGTATTGAGATTTGTGGAGGTGTACTACATCCGTAATTGGGAGAGATTGC 5 GCCACGAATAGATTCATTCTTCACGTCTCAAATATATAAAGCTTATTICAAAATAAATTCTGGGGAGCGTTCAACCTGAT TGAATCTGCTGTAAGCTCTGTTAATATATTTGTTCGAGTCACTTGCACTCAAAAGGTTTTTAGACAGAATATCACTTTTT TATATTATTCATGGTAATGTAATTCCCCCCTTTAATCTCTTCAGGGTTTCCCATTCAGTCATGATATGCGGTTCAAAGAA AGTTGGATCGACCATTAATCATGCTATCTCGACTTCTGTGTGTCTCTTTTTTGTCCATCTCTTAAATCAGTCACTTGGCA GCAGCAAGACATGGGGCCCACTCCAGACCAATTGAACGAAAAGCTCTTGTTAGAAAAATAGGCTGCTAATCTGCAAGCGA 10 GCTAATGGAAATCATTCTGGGCAAGGAAACAAAACTGAACAACATTAGCAAAAATCACTACATATTATAGGAATCAAGTAC ATTCTGAACGCTTAATCCTACAGTTTAGATATGAACCCTAAGGGTAAGATGAACGTCTTAGATGATCTGAGATATCCAA ATACCTGTAACAAACATTTGTATGGTGTATGTAGGGCAGGAACCCCATCAGAATTGGGGAATCTTTAAAGGATTTTTTAT AAAATTCCCATCCCACCCCCCAACAATGAAGGGAAATGCCTAGGTTGAAAACACGCAATACACATTCAATAAATGTTCA 15 TGGTTGAATGAAGTTACCTGGTAGGGATTTAATCTTTATTTCAAAAAGAGTGGCTGTGAATCTTTAAAAATTTCTTTGGT TCTTTAACATTCTCTTCTCACTAAACCCAAATTAATAATTCCTTACTATTGGCATTAAAAGTTCTCACTGGATCATTCC ATTTATACTCAGAAGAACAAAAGCAACCCAATTATTTGAGAGACACTTGAAATGAAATTTGAGGTCTAGAAACAGCATCTT GCAAACTTTGCAAAGGGGTCACAATGATAAATATTTTTCTGCTTTGTGGCCTCAAGGGTACCTATCACAACTACTAAGCT 20 ACAGGTGGTAGACTGGATTTAGCTTGTGGGTTGTAGTTTGCTGGCCTCTGGTCAAGAGCACTTGTTTTGTCTGGGAGACAT AATTTCAAAAATCATTTTCTTTTTTTGATTTTCATGGTTTTTAGAACATGATGTTTTCTACTATGGATGAATGCTCCTCTTT TGATACGCTTTTCCATCCTTGAATAACTTGGGAAAAAGTCAGGAGTGTGGAATGAAGAATTGGAATATAAAGGCTGAGGG 25 CGGACCTAATTTTTTTTTAAGGATTAAGAAAAAGGAGTAAGAGAGATGGTATGACTTATCACTTGGCTGGGGACTCAG CAGTCAATATATTCAGTGAAACAAATACCTAATATATTCCATGAAACAAGTATCGTGAATATATTCCATGAAACAAATAT CATGAATATATTGTGTGAAACAAATATCGTGAATATATTCCATGAAACAGATATCCAGTATATTCCATGAAACAAATATC ATGAATTTATTCCATGAAACAAATATCGTGAATATATTCCATGAAACAAAATACTGTGAAATCATACCACTGATTTTTTGA 30 AGAAACCTAATGAAAACAGCATGCTCCTATATCTTTTTTCTGGGTGATCTTTAGATATCTCGTCTTCCAAACTTTTGTGT TTGACCCAGTGTTGTAAGGAAATGGGAGAATATTGCCCTGATGTCTGGGAAATTGGGCACTCCCATCCTACAATTCAAGTG GGATTCTGTCTGGTAGCTGGTTGCTCTTCGCGCCTGTGCTTTGAATGGTGAATANCCCTCGGCGGGGGGCAGGCACCTGA 35 TGCCACTGCCCCGCCCCGCCCCGCCCGCTTTCTCAGATCACACAGGCANGGCTGAGGAGCGCTTAACACCCCNA GCCTCCCATNGAAGCATCCTGNAAAAAGCAGANCTTTGTCTTCCTCCATCAGCTTTGNTTTGTCCTCTNGCCGAGACTCC AGGGACATGATTGCTCTTCATTTTACGCTCGAGATCAAAATAAACAGAAACCACTTTCAGCTTTCCCGTTCCAGGGTTAA GTGCCCAAGCANGGTGTNGGTTCTGNTTATGTGGTTTGCAGTGAGCAAAACCACCCCCTCTTACCTGTGGCAGCAAAGGC AGGGAGACTITGAGACCTGGGGGGGCTCTCTGCTGTTTTAACAGAACTGGCTCNITGGTTGGGGGGTGGGGGGCACCCA 40 GCCTGATGACCCAGGGACCCAGGCAGTCCTTACAGGGACCCAGAATTTCACAAGCAAATGTGACCTCCAATTAAAGCTGG ACTTGATTAACCCCATTTCCCCCTCAAAAGATGATGCTTCTTAATGCCCTTTCCGATGAGGCCGTCTCACTCCTTAAAACTCTTC ATCTGATTTACACAAAGCCATCTGCTTCCATACGGGGTGTTTTATTTGGGATCCAGGAGGGGGAGAAGGCGCATCTGCCCC CTCCATAGCATCTGAATCTTAATGAATAAAAGCACTGACACTTCTTTAAAAAGGGAATAGCGTGATGCTATTTACAGTTTA 45 CTGAGGGAGCGATGAGTAGAGGAGCAGCTGGAGNGGTCCAGGAGCCCCCTGAACTGAGTATCCGGTGGGAGGTCAGATTT TCTGNCATCTCTGTTAGTTCTTCTCCTCCNTAAGAAAAGCAGATTTTAANGTAACTTATCATTTGTTCATTINAATTA CTCATTCNITTATTCCNITCTINCATTCATTTTCCTTTTNCTCCTTTCTCCCCTCTGTTCTCTCTGTTTTAACAGGT 50 TTTATTCTTATTGTGGTATGGTAAGGCCAAGATGAGGAAATGACTGCTATTGCAAANGATGGVITTGTTNACTCACANGA GAGAACTGTCAAGAGTTTTGNAGCTGGAAGCTATTATCCTCAGCAAACTAACACAGGCNAACAGAAAACCAAATACCGCAT GGTGTCACTTGTAAGTGGGAGCTGAACAATGNAGAACACATGGACACAGGGNAGGGAAACAACACACACCACGGGCTTGT 55 TAGGTGCAGCAAACCACCATGGCACAGGTTTACCTATGTAACAAACCTGCACATCTGCACATGTACCCTGGAACTTAAA CTTGGGTCATTTCCATGGGCTCTGGGGACACAGGGGTTGTCTTTTAGGTGTCTGACCCATGGCTATGGGGTGATTAGGGTAG CTGGGTGTGGCCTGGAGTTCGAGCCCAATAAAGCCAGTGTGAGGGTGTGGCTGTGAATTGGTTTGCATTTGAACT 60 GGCAATAATAAGTGAGCNAGTATGGCGNCCCTAATAGAAGGAGGGATGCCTGTGGCCAATATACACGGCTCAAAGTTGAC TCACCGAGTGCCAATGAGTGTGGCCCTGCAGGTCCTGCAGACCCCCCTGGTGGCAGTATTGGTGGTCACAGCTNGGCAA AGGGAAGTGTGCCTGCCCGGAGAGCTTGGCTGAGGTTGGAACGTGGGAGTTTAAGAGAGCAAACTCCCACAGCTTGGTGC AGAGAAAAGTGTAGAAAGGTCGGGTGTCATACAGCAGAGGGGCTGTGATGCTCTACTGAGGAGGTGGAAGTGTTTTTTCTG 65 AGGCCATCAAACACGCCGTCAAGCAGGGAGGCAACAAATCTGAGTCGTTCCACAGATACTTTGAGNTGCAGTACAAGTTG GTAATGGGTAACAGCCTAAACCATGTGGCACCCCTTCCCTCTTATCAGCTTCTTGCTACCATGCAGAAAAGTGCTGAAGG TGGCCTGCCTTAAGGCAGTAGCACNTAGAGCAGGGANTGGGGAGGACTTGCTGGCCAGATGCATGTGGACATGATGGAAA GGGAAGAAGAACTGTCAAGATTTTCACTATCAGTGGTATAAGCCCCGTANGTAATATGCCTAGTGTTCCATTATTGGA ACACTAAGTATGTGGGAATTATTTATATCCTTACCGCTCAAAGCCATCACCAGGTCTGATCGTGAAAAATTCAAAAAAATTG

CAACCTGAGGCATAAATGGGTTTTAAGCTCCATACCAGTAAAACTTAGCATATGAAAACAGTTCTGGCTGATGGGTTGGT A GAAAG GATA GATA TAGATA CATMITWITA CACATA TWITG CMCAGTA ATAGATA TAGATA TAGATTATTGTATGATACATATCCATGCATATACGTGGGTGTACWCACACACGGTACACAAATATATATGTGCCTTTGGACAAA AAAAAATCCCCAGGACAGTCTCATTTGGCTTTTAAAATGCTGCAGTTGAATAGGACCGTTAGAGGTGGCCCTAAGGCAGCC 5 TTCCATTCAGGGCACGCAGATTTGGTTCCTCAGCTCCCTTCTTCTCTATTTCTGAGTCACGTGGGCTGCACCTATCTGTC AGAAGCCCACTGCCCACCAGAGCCCCTGACTCTGAATGGTGGCCCAGTGCTTTCTGAAGACAGAGGTGGGACCTGGTGC TGGAGACAATCCATTCCTTTCACAAAGACTGTAAGCCTTACCCAAGCATTAATTTTGCTGCATAGGCGGCCTGTTCTCCC ACAAAGCACTGAGTAAGAAGAAAAAGGGGCCCGGATAAACCAGCAGGGCCTGGCAGACAACTTCTGGCTCCCTTGCCATTT 10 TAGTTTCTCAGAATCCTCATTGGAGGCATGTGTATATTTCTAAATTTAAATGTATTCTCCTATACTGTCCGGGAAAGGA AGCATTTTCAACCAAACTGAAAGGGAAAGGTACTCTTTTTTATTCTAATACTCACATTTCCCAAAACATATCCTTAATA TTGTACATTTGGCACAGTTATTGTTGAATACTTGGAAGGCGATGTGTATAGCATACAGAGCTGCAGCTTTGGACTTTGTG GCTTTAGGTAAATTACTTATTCTCTTTGCACCTCAGTGTATTCTTCTGACTAATGGGGACAGTAGCAACATCGATGTCTC 15 TTTTTTTTTACTACTTCCATTATTGTTGTTGTTGCTGTACGTCTGAAGGGCTTTAGTCCTCTTATGAGCAAGGCAAA AGGGACAATGTTCACCCTTTGGACTGGAAGTAAGAAGCCCCTGCAGTTCCAAATGACTCCACATTTGGAATGATTTCACA AGGAGTGCAAAAGAAGCCTCTTGTTTGACTTTGCCCACAAATGCCAGAGGAGGACTCTTCTGAGCCATGCCAATAAGAAA AATGAGAATGCCAGCTTAAATAAATGTTATCACAATCTCTGCAGAATCGTGATGTCTCCGATTCTTAAAAGTGTCTACTG 20 CAGGGTATTTATTATTCTGTGATAATAAATCGCTGCTTATGAAATGCAAGGAATCGAGTGTCATGGAGGGGAGGAAG GTCAATTAGGCCCTCCTTATAATTTTCTGCTTTAACAGCAAATGCCAGCCTATCGTGCATCAGATGCAAGGGAGTTTGGA 25 AGAGGAGCAGAGTTCTTCTGGTCTCAGAGCACGGGAACGGTCAGGGAATTTGTATGATGGAGCACCCTGTTCCCATATC TGAGATGATTCATTTATCTTGAGTGCCATCTTAACTACAATTAGAGTACAATTATAAAGTATCTACAATGGAAATGGGTC 30 TTTATTTTTTTTTTTTTTCGAGATGGACTTTCGCTTTTTTGCCCAGCCTGGAGTGAAGTGGCATGATCTCGGCTCACT GCAAACTACCCCCGCCCCCGGGTTCAAGCAATTGTCGCACCTCAGCCTCCCAAGTAACTGGGATTACAGGTGCCCACCAC CAAGCCCGGCTAATTTTTCTATTTTCAATAGAGATGAGGTTTTGCCATATTGGTCAGGCTGGTCTTGAACTCTTGACCTC AAACACATTGCAATAAAATAAAAAGAAAAGGGATTGTCCTAAGTGAGAAGCAGAGATGAAAATGTGGAAGGATGATTGTG 35 AGAAGTCCACATTGCTCCATTTGGACTTCCTTTTTGTAGTGGGCTATTAGATTTTGCCTCTGCTTGTTTCTGAATACCCA  ${\tt CATAGACATTTGGAAGCAAAGAGAAATGCTTTTCATGTGGGAAAAACCAATTACCAACTTCAGTGATATTATTTCTCCGCC}\\$ ATTCTAGGTGTTGGGGATACATCCAAAAACAAGCAGGAAAACCCCATTCTCTTCATTTCTGGAATGCCGGAGCACTGGGC 40 ACCCTCTATCACAGCCTTTGCTAAAACCACTGAAAACTGTCTTATTTTTCATTTTGCCCGGAAATGCGACACATAAGTGC GTGGCGCGATGTCAGCTCACTGCAACCTCCGCCTCCTGGGTTCAAACAATTCTCCTACGTCAGCCTCCTGAGTAGCTGGG ATTATAGTCACCTACCACCATACCCAGCTAATTTTTGTATTTTTTAGTAGAAACAGTGTTTCACCAGGTTGGCCAGGCTG 45 CTCTCGAACTCCTGACCTCAGGTGATCTGCCCCACCTTGGCCTCCCAAAGTGCAGAGCAGGAATTTCATTGGATTTCTACA CTGCTGCTTTTTCAGAGCCTGGAACAGTGCCAAGCACATAGTCGGCCCTCAGTGAGCATTTGTTGACTAACTTAGGTCAC AGATGTGGGGCTGTGATICTGAAGGCCCCGGCTCATTCTTGGCTTTCAGAGAGGTTTGCTTTCACTCCTGGGCAGCAGCA GCCCTGGCTGCCACCACCGCCTTCCCGGAGGTCAGCTTTATTTTCAGTGTTTTTGCCCTTCCGATCCCTGGGTAAGA AGTAAGAAAATTICTAGTGCCTGGAGTCTCCATCCTCGTTTCCCAGTCATATCCTAGAAGCTGCAAATTGCTGGCTTGTG 50 AGACATCCCATCAAAATTGGGATITCCTGCTTATCTCGACAAAGCAGATCTGGCATCCTTTGCCTGCATTTTACATTTGG CTACAGTTGGCTGGACTTGAGCAGCGGCTGCCCCTCTTTAGCTGGGGCATGTGCCCTGTGGTTTGCCATAGTACCCATCA GCTTACACCTAGCTGTTGTTTGGTTCTCATAGGTCTCCCTGATTCCAGCCTCCAATTCACTGAGCTGGCCTCTGCCAGT 55 GTCACTTCTCCCCAGTCTTGGCTTTGATCAAGCTTGGAAAGGCCTGGCCTTTGTGTTGTCACATTCTTCTGCCTAGAGTA TGCCTTTCCCTTCACCAAACCAAGTGGCTCTTTCGGAAGACTTGCCTGAATCCTNAGACCCCTTCTCTCTACAACCTTCA GTCTGAGTTGGGTACCTTGCATCCTCCTTTGTTCCCATACTAACCCCTACAACCATGGTCATTTTGTGGTTATCTGTTTA ATTCTCTGCTGGCTATTCCAGGCTGTCAGCTCCCTGACTACAAGGACTTTGTTGCTCACAATCATATCCACGGCATCCAC ACAAGATCTGGCCGCTACGTGGAAGGACACATAGTTCCGTCTGGCTTGGAGCCTAGCTTGGGAGAGGGACAGTAGTGGGG 60 AAGGGTGAGCTTGGAGATAGAGCTGACCTTCCCAGGTGCTTCAGCAGTTACAGCAAGATTCTAGATCTTACCCTGACAGT AGATCATGGAGGCCAGAGCCAGGGATGGATATAGACTAAGACATGCCTGTAGACTGAGTGTCGAGGAGCAAGTAGATCAA 65 CAAGCATTGCCTGGATCACCTTGTTAATATGGTTTCTTATTAAACGTGCTGGAAAAAAGAGGCTCTAAGTGCGTATGCTT TTAAAGCAACACTATTAGCAAATGGCCACTGGCTTCATTTTTCCTGTGCATATATTTTTTGTGTATTCCGGGAGGATTTTC GACTTTGATCGTGTGCATGTATTGCAGAAATGGACAGGGCAATTCTCAGCCCCATTCATCTTACAGACCTCAAGTGAACAG GCACAAAACAACAGGCTCCACCCTCCTTCCCCCCTCTATCTCATACTTTACCTCAATTTATGACTTGGCTTACAATCCGT

TGCAGAAAGCCTAGCTCCCCAGCTTCTCCTGAATCTACGTTTTTCTATTTTGTCTGAACTAGCCAAGGTCTCTGGTGTTT TTTTCTAGGCCATTTTTTCTTTCCGTCTTTGCAGTTCAGGAGATTATATTAGAAAAATATTCTATACAAAAAAATATGCAT AGTAGGGCTTTTCTCCAGCTAGCTCAGAATAAGTCATTATTACTGAAACAGGTACCCTTTTGTGGAATTGATTCTGA 5 AATCTGTTTGGATCTGAAATCTTTCTTTCTTGCCTTTGAGTAAGATACGGCAGAAAAAACAATTACACTAGCTGCTGGT CTGTATTTACTGGTTAGAATAGAATATTATTACCATCAAGAATAACATTAGTGGCCAGGTGCGGTGCCTCACGCCTGTAA TCCCAGCACTTTGGGNAGGCCGAGGTGGGTGGATCACCTGAGGTCNAGGAGTTCAAAACCAGCCTGGCNCAACATGGTGA AANCCCCGTCTNCTACTAAAAATACNAAAANITTAGCCGGGNNTNGTGGCGGTGCATGCCTGTAATCCCAGCTACTTCG GAGGCTGAGGCAGGAGAATCCCTTGAACCTGNGGAGGTNGGAGGTTGCAGTGAGCTGAGATCACGCCATTATACTCCAGT 10 ATCATTWIGAAACCAGTICTTAAGCAATTAAAAAAAAGCAGCTATGGTGATTGAGTTTTTTGTGTTATGRATTTTTATACTC TGRAGGCATGGTCATWRTGAATGCCWAAGAAATGAACAGGAGAAAATTTTATTTGAAAAAGCTGGGATTGTTGCATGCTGC AGAATTTTTTTTTTTTCTTTTCCTGTGTAACAAATGACCACACTTAGCAGTTCACATTCACATCTTGTTTATTAA CTACAATTCTCTAGATCAGAAGCCTAGACACAATGTGACTGGCTTCTCTCCTCAGGGTCTCTTTGGGGACAAAATAAAGGT 15 GTCCGCTGGAGGAACATCCTTTCCTGCATGCTCTGTGGAAGAATCCACTGCCAAGCTCATTCAGGATGCTGGCAGGATTC AGATCCTTGAAGTTGTAAGACTAGGGCCCCTGTTTCCTACTGACTTCTGCTGGTGGCTGCCTCAGCTCCCAGAGGCAAC AGTICCCTCCTGCTTTGAATCTCTCTGACTTTCCTTGATTTTGATGTCTAGGTCTGGATTTCAAKGGCTCACGTGATGAG 20 TATGAATTGACTCAGTAACTGGAAGAATGCATGCGTACACCATGGACCGGGAATCCGGGAGGCCAATTTAGAATTTTATG ATCAGAGGTTTTATTACAGGCAGACACGGCTTCACCTGTGAGCCGAGCAAGTGATTTTGCCTGCAGAGAACAACGCAGGG 25 TYCCTTCTATGGCTCAGGATCTTCAGTTACCAGCAGTGGAAGTGAATTGAAAATAGTTGGTCTCTTGAGTGACCTGATGC AACTCATTATCTCTCTGTGCCTTAACGTCTCTATCTAATTTCCNCATNTAAAAGTAACAGGAAAAANGCGCAATGACNT TTTGCACCAACCNTAACAATNGGGTTGACATTCNAGGATTGCTATAATGATGAANGCAATGGCAAATGGAGTCTTTGTTT TTAGCCCCGTGGAGGCATATGCTGGGCACTCAACAACATCACTTCCCCTGCCCTTTTCTCAGATAGAGTTATCCAAACA AATTGGATCCTCAACTCTGGATTTGATCCAAGCTCTCTGGAAATCTCTAGCTTCTCAAACTGTTTCGTGGTGGAGTGCCT 30 TCCTANCTCTGAGAGCTCACTTTATCTCAAAAACCCATGCATATTCTGCATCTACTCTGAATTCCGCAGTGTTGTGTGT ACTATACGATCTAGTGTTTTCGTTGCTTACAAGTTAGATTCACACTCCAGGAATGTATCTGTTCCCACATCCCTGATGC TGAGCATACCAGAGTTAAGGGAGGCAAGCAAGGCCCTTAACCTCCTAGGTTCATGGAGGTACCCATTCTCCACTTCTTGA 35 TCACTTACTCCCATTGGAGAGGCCTGTTTCCATACATAGCTCTTTGTCAGTTGCTCACACTCGGTCAATACTTGCCTTCC TTTGAGGCCATCTGCACTCACTGACAATCTGATTGCTCCCCTGAATGGAGGTGAAANGCATGCAAGCTCGGAGTTAAGAT CTTTAACTCAGGGAAGACCCTGTCTATGGAAGTGCTGAGCNTCTTCAGTGTCATCACAGAAAAGCATGAGCCCCTCCCTG GTACGGAGTCACATCCCATAGCTGAGCGACGTCGGAGCTCCACGATGGGGAGGTGACACATAGTCAGTTAATTACAT 40 TTTTAATCCCTCCCCTATCTTTCTTTCTTTGCACCCACGATGCTCTGCACTTCAAGCTAAATATAATGTATCTGATTTT ACAGCATACATACTAATCAGGTTTGAAAAGTTGTCTTGTGAGGCTTTAAAAAGCTAGCCAAGAGCAGTGCGATTTCTCCAA TTGACAATACTTTCCTTTTACTTTTTCCTGTGTATGGGGTAAGTGTTGCCCTTCTGCAACTTTCCTTTTATTTTATT TATTTATTTCTTTTCAATACTCTGAATATCACTGGAGCAGCTGCAGATTCAGGGCAGTATGGGGTGGTTCAGGAACAGAA 45 CTGACAGGTATTGAAGCCAAAAATTGAACAATAACAACGTAGGAGGAGAATCCAAAGATAGTATGTGTTCAGGATACGG AATAGAACGTAAAGGTAGATTTTTAGAACCAAATGCCTTTTAGGAAGCTACCTCTTCCACCCTGCTGCCTTTTGTGTTG 50 ATTCTTCCCTGTCCCTGCATATGTACATCCTTGCACTGTGAAATTGTAGATCTCGCCCTCCAAAGGTGAAGTTCGTTTG TCCACTCCTTGAACCAGGATGGCATGAAACTTGATTTGACCAATGAGGCATTTGGAAACACGGCACAAGCAAAGGCTTGA AACGTGCTTTTATGTTGGTGCTTGCCCACTTGCTGCTACGAACCCTTTTACTTTTGGGTGCGAACAAACCCAGGCTAG CCTTCTGGGCGATGAGAGACACAAGACCATGTTTCCATATTGCCCCAGCCAAGGAGCCAACCTACAGACNGCAACTGCCTT GCTGACAGCAGCACCTGCCCAGCTGAGCCCAGCCCAAATTGCTGACTCATGCAATCTTGAGCTAAAAATAAGTAGCTGT 55 TGTTTATAGCCACTAATATTTGTGATGGTTCATTGCACAGCAAAATNTGAATGGGGGACAATANCTTTTGAAATTGACTCT TCGGGGGCTGTTGTAAAGAAGTAAAATGTGTAGTGTTTGCCCTTTTCCTCAGCTGTAGGCCTGGTATGCAGAAGTATTCA GTTATTTGGTGAGTGAACCCTCGCTGATGCCCTGGCTAGTGTTTTCTGTCTCAGGAAGCATGAACATTTCATCCAGGGTT ATATGCTACAGGGATATTCAAGAAATTGAAGATCCTTGAAAATCTAGTCTCCCTCACAAGGATCAGGTGGCAGGATCTAA TGGGAGGGTAGAGAGTGAGTGTTAACACACAGAGAACCCAGGAGACCTTTCTCAGAGGTCTCATATCAAGAAAAGATCA 60 TTTCTCCTAAGCAATCAATTTCTTTTTAAATCTGAACCTCATATCTGAGAATATTCCCTTCTTTTATCTGGCCACTCGGG AGCTCAAAAATAAATTTCTGGCACCCTTCTTCCTGGCTCCAGTAAAGTCATACAACCATATGGTACCTCTCTGGCAACTA ATTTCACCTATTTCCTTATTTGTTTAAAAATTTTAACTTAAATTTTTTCCCCTCAAGATCTATTTACGGATCATCAGTTT TATTTTTCTTTTCCTCTTTTTCTTTTGCTCCCTTTTCTCCCCACTCTTGACTCTTCTCTAGTTTTATATGCAGT TIGTATTTATCCATGCCATCTGAAATCCTCCTTTCTTTTAACAAGACAAGTAGAAAACGAAAACAACATCAAAGGATAC 65 ACTACCCAATTGTTGGAGCCCTAGGACCCGAGAGAGAGTACAAGCAGGTTCTTGAACTGTTCTCCCCAGCAACTATA ACTGGAAGGAACCTCAGTTTGTCCATTCATTCATCAGAGCAGCATAGCAGAGTAGAAGGAACTCTGACTTTGGCAT ACCAAAAACGTACTGGCTTTAAACAACACATGCTTATCATGTTGCAGTTCTGGGGAGTCACAAGTTCAAAATCAGTCTCA CCTGGTCAAGATGTCAGTAGGGCTTGTTCCTTCTGGAGGCTCTAGGGGAGAATCTGTTTCCTTGCGTTTTTCATCTTCTA

GAGGCCTCCTGCATTCCTTGGCTCTTGGCCCCTTCCTCTGGCTTCAAACCAGCAGTTTAATATCATCACATCTCCTTTAC TGATTCCTCTTCCGTTGTCCCATCACATTCTCCTCATCTGGCCCTCTGGCCACTCTCTTATAAGGACCCTTTTGATTTCA TTGGGAATACCCAGATAATCTTGGATAATCACTCCATNCTCAGGGTCCTTAATCACATCTTCAGAGTCCCCTTTGCCATG GCTGATGACAGAGTCACAAATTTGGGGAATTAGTGTGTAGACTTCTCTTGTAGGGAGTCATTATTACTCTACCACAACCA 5 CTAATTCTGGACTTCACGTTCCCTCATCCATAGAGCAGGGATAACAATATCCTCCAGGCTATCCGCGGAAGTAGAGAATA TAAGCTTTATCCAGGGGGCCACTCAGTGATGGGAGTCTTCCTTATGAAGCTGTCCCAGCTCCANICTCTCAGGACTGAAA TGTGGGTAAGACCATCACATTTTTCATCCCCCGCCCCCCGGCCCCAACATTGACTGGGCAGATATTCATACAATGGCGAT TGTTTTGTCTGCCTGGATGGCTTTAACATAATACCATAGANCTGGGCAGGTTAAACAGCAGACCTCTATTCCTCACAGTC TAGAGGCTGGGAAGTCCAAGGTGAAGCCATGGGCACATTCTGTGGCTGCCTGAGGGTCTCTTTTTTGGTTTCCATATGGAT GCCTTTGTGTCTCTCTGCTTGGCAGACAAGAGGAAGGGGGGTCTGGAACCTTTCTCTTATAAAGATACTAATCCCATCGT 10 ACCCCGTCCCCCATGATCTCAATTGAAATTAGTCACCTCCCAAAGCCCCACCTCCAAGTACTGTCCCACTGGGGCATTAG CTTTTACTAAGTGATTCAGAAAATAGCAAGTATAGTAGTGGGAGAACATGGTATCAGAACCAGGAGAGGGGTCCTCTGGCT TTCTGAGTTCTGCCAAAAACCAAGTTTTGTTGCCTTGGGCCTGTGGCTTTTCCTCCTTGATTGTCGCTGGCCTTGCTGTA 15 AATTGTGAGGCATCCATGTGAGGCACAGGATGGTTCCAAGGACCAACTGAGGCTGTTCTGTGCTGAGGCTGGGAGGGTGT CTCTCAGGACAGGGCTCACAACAGTGCAGTCAGGAGATTGGAAATTTTAGTGACACCAAAGTGGGCTTTACTTCCTCCTC  $\tt CTAGAATTCCTGCCAGAAAGGTGGAGATGTGCAATAAACNTGAGCACCGANTAGAGTACCAAGAACATGCTTTTTGCACA$ TTGTTTGATTCATCAATCAGAGTGGGGCATGGCTGTCATCAGTTCAGAGTTGAAAGAATTGAAGATCAAAGGGGTCACGT 20 CTCTGTGAATAGTATTAGTAATAGCAGCAGTATCGATAGCAATCATAGTAATTAAAATGGAAGCAACCANCCAGINGTAA CACCCTAAGTGATAGGTGTATTCATCATTCTCAGTATCAGAAGAAGAAACTGAGGTTCNAGAATGACCCAGTAAAGATCA 25  $\tt CCAGCACTITGGGAGGCCGAGGTGGGTCACGAGGTCAGGAGGATCGAGACCATCCTNGGTTAANCACCGTAAAANCC$ CGGAGGCTGAGACAGGANGAATGTCATGAACCCGGGAGCGGGGGCTTGCAGTGAGCAGGAGATTGCAGCACTCCAG AAAGGTTCCCAAGCTCGCCGCAGCCTGCTATTGTATTTAAAGGGTGCCCTTTGCTGCGTAACTAGGGCAAAGAAGAACCA 30 ACTGGCTGTTCCCCACTGGCTGTGGAGAGTTCCAGCTCATCCACCTGCCTCTGTGGCTGAGTCGGGGAGAAAAGGACAA AGTTTTTCTCCCGCAACTGGGCCACCAAACCAGCAGAGCCTCCAGCCGGGTGGTCTCGAGGAGGCCCATTACCGGCTGG AGTGACAGAGTGTGTCAAGCCTGCAGCTCGTCCCGTGTCTAATGGAACAGAACAAGCACCTTGCTGCCCCTTGTTTTCCA GTGGCTCACCGGGGCTTTGCGAGGTTTATTAATCTTAGCGTATAATGGAAAATGTGTTGCCATGTGAAATCTAGAGCCTC TGTTCACTACTCCGCGAATTGAAGGCGGCAGGAGTCTTTGTCTCATTTACACACAGTGCCTGCGAGAGACTCTTAGGGCA 35 GAAGAACGCCGTCGTAAAAATCCGTGCGGAATTTGAAAGTGTGCATTAATGCATGTGACCAGATGGTTCTAAAATATGCC ACTITICACCAAAAATCATCCTCTGAAAAACTCTTCTGAACAACATCGGCTGTGCATAGTAACTGCCTTGAGTGGGGCCCAT CCTGCATGCGGGAAGAAAATCCACCCAGTGCAAGAACCGTGGCAGTACTCAGACCATTTAGAATCACTTTGAGTTATTA 40 TTTTTTTTTTTTGAGTTGGAGTCGCACTCTTTCACCCAGGCTGGAGTGCAGTGGCCCGATCCTGGGTCACTGCAACCTCT GCCTCCTGGATTCAAGCGAGTTTCCTGCCTTAGCCTCCCGAGTAGCTGGGATTACAGGCACCCGCCGCCACACCCAGCTG ATTTTTGTATTTTAGTAGAGGTGGGGTTTCGCCATGTTGGCCAGGCTGGTGTCGATTTCCTGACCTTGAGTGATCTACCT  ${\tt GCCTCGGCCTCCCAAAGTGCTGGGATTGCAGGCATGAGCCACAGCGTCCAGCCCCAACTTCTTAAAAGCCAGAAACAACT}$ 45 TATCAGTAGATGCATCTAATAATCCTAACACTGTCATCCTTATACTTGAGGTCTTATTGTCCACTTCTACCTTAGCTATG TTAACAGATGAGTAACCTACTCTGGATTTACCCAGATAGTGCTGTTAGGCACCACACACGATGAGATTGGAGGCACCTGG NCAGGATACCTAGGGACCTGTTGGGGTGGGTGGGAAGAACCCTATGGGCAGAAATGTGACTTTCTGTAGCAAAGATGTAC TGTTTCCCACTGAGAAGATTCAAGAATAAGAAAAGTGCTTCCTTGTCTTTCTATATTGTTATTAAAACAAGTAGATGCAT 50 TTTCATTGAATCAAGGCAGTTTTCCTTTATAAAATGTCCTATTTCATATCACTGTTCAAACTTGACATCCACATTTGAGT TGGTTTAAAATATCACTGTTTTGTTGACATTCACCTGTATTATACATTTCAGTTGGTCAAGTCATTTAATTTATCATAAA  ${\tt CCATTTAAGGAGCAGTTGGAGAAAAGGGGGAAAAAGTTAAATGTTAATGATTCTTTTCGTAACTGCAATTTTATCGGCTC}$ CTTTTTGTACATATATGATTATGAAGCAATTTGCATGAAATTTACACCTTTTCAAAATTTTGAAAATTGCCTTGTTGAAAA 55 AGCAGGAAAATTAGCACTTCCTGCAATAACGATACTAATTTCATTAGTGAACGTTTTCATTTATAAAGTGCTTCTTCCTT ATCTTGAACCTTTTATCCTCTTATTGACCAAAGAGAGGGCATATCTTTGGGAGCTGCTAATAAACCATATTCGTAAT ATGATGTGACCTCATCGACAGGCTGCTGCTTCTAGCTCATCATCTTCCTTGATCATAAATACCCATCGGTACCTCTTGTC ACATGGTGCTCTTAGAGCTTCCTCTTTGAATTTCACATGTGATAAGAGATGGTTTCCATCCTGAAGAGCTTGCAGTGGGA TGGTTATCGGAAAGATTAAAACTCTAAAACTAACAGGTGGATATAAATATAAAGAAAATACAGTATTTTGTTGATTTATG 60 TTCATATAACTTCTTTATTGGTAAAAGGGAGACAGGTGAGAATACAGGAAATCCTTGTGGCCTTGTTTGCCTTTTTTAGA TGTTTTATTAATATAAAAACTTGCGTATAAATGTCCAGTTTCACCACCAAATCCTTTCTGAAACATTGGTAGATGAA  $\tt CTAATGCAACAATTTATTTTTTTTGAGACAGGATCTGGAGTGTGGTGGTGCAATCATAACTCACTGCAGCCTCGGTCTC$  $\tt CTGGGCTGAAGCGATCCTCATGCCTTAGTCTCCCGAGTAGCTGGGATTACAGGCATACACCACCATGCCTAATTTT$ 65  ${\tt TTTTAATTTTTTTTATAGAGATGCAGTATCGCTTGTTGCTCAGGCTGGTCTCATATGCCTGGACTCAAGTGATCCTCC}$  $\tt CGCCTCTGCCTCTCAAAGTACAGGGATTATAGGTGTGAGCCACGAAGCCCAGCTGCTGCAGTTACTCAACCAGCTTCCTA$ CTAGAAGCCAGGCGTTTCTCAAGCTTCTGAAGACACAAAGGTGAACCCCAGACNAAGCCAGGTTTACAGAGTGTGCATTT CAGTGGGGGAGCCAGCCAAAAAATCAGTAAACACCAAGATAAAATATATTCCAGTGGCGATACATTTTCAGAAACAAANC AAACNATGGCACTGGGCTGGAAATGAATGGCAGGGGGAGAAGGCGGGGGGCAAGCTTTGGAAAGCACGGGCAGGTAAGG

ACAGGGTTTCAAAGGTGAGAAGGAGCTGGCAGTGTGAATAGCCAGGGGAAAAGTGTTTTGGGTAGAAGGAACAGAAAGTG AAACCCTGCCCTGGCAAGGCAAAGATTATTCATTGCTGAAGAGACTATGTTGCCCAGATGACTTGTTCATGTAATCTGTG TTACAGTAGAAGAGAAATGTACATTTCTGAAAATCCACTGAGGAAGAAAGGGGCAGTGATGATTCTAAATGTTAATAATG 5 CAGACAGCCTTTGCTTTATGTATCAATTTTTGTAAATGTGTTGCTTAAATAGATTTTTATGAGCCAGTAATGGTTTAGAA AGGTAAATGACTTGCCCAAGGTCATACACCCAGTACACTTGGGAGCCAAAATTCATCATCATAGATGACTTTGTGAAATGTCC TATTAATAAGTTTTTGTGGGCATAGGTCTTGTTTTGCCAACTTGACATGTGGATTTTAAAGGGCAAGTGCCTTAGAATAC AAACTGTCCTATAAAGAATACCATATTATCGAAAGGATGTTCAAACTCATCAGTTAGAGGCGTTGCAGTTGGCTGGGTGC 10 AGTGGCTCACACCTGTTATCTCCGCACTTAAGGAGTCCAAGGCAGGTGGATTACTTGAGGTCAGAAGCTCCAGACCAGCC TGGCCAACATGGTGAAACCCCTTCTCTACTAAAAATAGAAAATTAGCCAGGCGTGGTGGTGTGTGACTGCAATCCCAGCT ACTCGGGAGGGTGAAGCAGGAGAATCGCTGGAACCCGGGAGACAGGTTGTAGTGAGCTGAGATGTCGCCACTATACTCTA GCCTGGGCAACAGAGCTAGATTCCATCTCAAAAAAAAGGCATTGCTGTTAATACAACAATGATAAGTTATTTCACACTCAC CAGATTGCCAAAACGTTAAGTACTAAGGTCATAACAAGCACTGGAAGGATGTGGAGAAATAGGGAATTTTATGCATTACT GAACTGAAACAGCCATTTTGGAAAATATTTTGGTATTACGTAATAAGTAGTACTTAGCAACTTATGCAATTTTGGTTCCT 15 ATAAAGATGCCTTAGAGAAACTGTTGAGAAACTAGGAAAAGCTCAGGAATGTTTCTGGTGCATAATTTGTGATAGCAAGAA  ${\tt CCTGAAAGTCCTCCAAAAGCCGTCTACAATGAAATGGGGAAATTAATGGTGGCACATTCCTGCATAGGAGATAGCAGTGA}$ TAATGGGTGGATACCAGAACGTGCATCAACACAGAAGAATCTCAGCAACATAATTCAGGATTAAAACAGCGTTTACAGCT GGGCACAGTGGCCCACACCTGTAATGCCAGCACTTTGGAAGGCCACAGTCGGCAGATGGCTTGAGCCCAGGAGTTTGATT 20 CCAACCCGGCAACATACTGAGACCCCATCTCTACTAAAAATACAAAAATTAGCCAGTGTGGTAŢCATGTGTGTGTG TCAGGGGTCTCAGGTACTTGGGAGACTGAGGAGGAGGAGGACCTCTTGAGCCGGGAAGGTCGAGGCTGCAGTGÁGCCATGAT AGAATATATaCAGTATGATTCAATTTATAGAAAGCTTAAAGTATAGGCAAAGCTAAACATTCAGGATATTTGATAAAACT ATAAAGAAA3CCAAGGGAATGAAGAATGCAAAATATGAGCTAGTGTTTTCCCAGGTGTGAGGGACGGGGCATGGTTGGGA 25 GGAAAACAGAATGGTGCCATGGCGAGAGATACACAGGGGAGGTATTGGAAAGTTCTGTTTCTTAAAATGAGTGACAGGTA CCTAGGTAGTCATTCTATATGTTATTAAAGTGTACACACATTGCTTATGTGAAGTCTTGTTATATGTGGCACATATCACA TAATCTGAAAGAATCTGCTTCCTGTAGTAAAAATTAAAAAAATTATAGCCGGGCACGGTGGCTCACGCCTGTAATCCCAG CACTITIGGAGGCCAAGGCAGGCGGATCACGAGGTCAGGAGAGAGACCACCCTGGCTAACATGATGAAAACCCCGTCTGTA CCAAAAATACAAAAAATTAGCCAGGCATGGTGGCGGGGTGCCTGTAGTCCCAGCTGCTCAGGAGGCTGAGGCAGGAAAT 30 GGCGTGAACCCAGGAGGCAGAGCTTGCAGTGAGCCGAGATCGTGCCACTGCACTCCAGCCTGGGCAACACAGCGTGACTC CATCTCAAAACAAACAAACAAANCAAAACAAAAAAGGTTTTAAGAAATGTTCTAGTACCTTGAAACCAAAATAGGTATCAG ATACTTGGCTGTTTTGTTTTTTCTTCTAAGCCATTTTGACCTGTGAGATTTTATGTGATGAAAAACATAAGAATGTGGTAT ATCACTCCTCTCAAAAACATTCAGTGGCTCCCTGGGCCCTCTGGGACTAAGTTTATAATGCTCAGCTTGTCATTCCT 35 TTGCCCAGTGTACTCTCTCTCACTAATTTGTTCATTATTTTAATGCATTTTTCTTGAATACACTTCTGTAGACAGCCAT AAGATGGGTAGCAGGAATGCTGCACTGAACCATAATCCAAAGCTTTCATCAGGTTCACTTGCTTCCTGTCCTTGCCACAC CATCTGCTCATTCTCGATCTCCACTTGAACACACTTCACATTCTCCACTTNGTGTATCATTCACTATTCTTGCTACATAA ATTAACACAANATTITIGCAGCTTAAAACAGCACACATTTATTATVITCATGGTTTCTGTGGATCAGGAATCTGAGTATCA GACTTAGCTGGGTCCTCTGCCTAGGGNTNTTCACAAAGTTGCAATCATATATTTGGCCAGGGTGTGTTCTAATTTGGTAGC 40 GGCTTNCTTGCTGACTGTTGGCTGTTGGCTNGGAGGTACCCCTCAGCNTCCTAGAGGCATCAACAGTTCCTGAATATCTG GGCTTTTCCCACAAAGCAGCTTCCTTCATCAAGCCAGCAACAAGAGTTTCTGGGGCNAAGTTGGTCNNAACAAGATNGGT GTMCTTACATNGCCCAATGTAATCATGGAAGNCCATGTATACCTCATCACATTTGCCAGATTTCTGCTGATTAATACCAA GTCAGAAGTCCTGCACACATTCAAAGGGAGGACACTGCACAATGGTGTGAATACCAGGTGGTAGGGATTATGNTGGGGCC 45 ATCTGCCTTCAAAGACTACTACCTCNTGTTGTCACAAATGGCAAGATTTCATCCTTTTTTATGGCTGAATAATATTTCACT GTATATGTGAACCACATTTTTAAAAATGCATTTCTGAACCTGAAGGACATTATGTTAAGTCAAATAAGCCAGACACAGAC 50 GTGGTTGCTGGGGGGTCAGTGAAGTGGGGAGGTGTTGATCTAAGGGTTCAAACTTCTCGTTAATAATAAACCAG 55 AATCCTCCTTCAGATGGAATGAGAAATCATCTCTGGGTTAGTTCTGTCCCTGAAGGTGAGGGCCAGACAACACATCAAAA GAACGTATTTGTTTAGAGGATACTAGCCTGAAATAGCCCTATCTCCAGGTTGTCTGATGCGATGAGGATGTGGTGTTAAT  ${\tt CTTACACCTACCCATTAGTCTATAAAACTCCTGAGGGATGCTCAGGAAACCAAAAAGGATGTCTGCATGGAGGACAAGAA}$ GGCACAAATCGTTTGATTTCACCCCATCCTAAGATCTTGTGACTCAAGCTTTGTTTTGGACTGGGGCATTGGATCTCCCA 60 CATGCCCTCTCTTAAGTCGTGCATTTGACGCATATTTAATAAGCACCTACTGTGTGCCATTAGAGACCATGATACAGTTT TGAAAGCCTAGCCTGAATAATGGATGACACCCTCCTAAAGCCACGATTTGGTCTTGATTATTTTTAGCACTATGAAGAAA AATTTCATTAAATCACAACTCTATTTACTTTTAACCCAACATGGTGAAGTTATCAACATATAATGCCTGTCTATACTTTC TTTACCTCTFTATATAAAACATGCTATATTAAAAGAGAGAGTTAAATTTTACCCTGTGGAGTAAAATGCAAACACAAAATT 65 TGTATGAATTITTAAAAGAAACTTCAATATGCTATGCATTTGAAAGGGAAGAAGTAATCACCATAATCTTGAGGTATCTT TNAAATAGGCTTCCGGCGCAGGTGGTGTATGTTTCACCAACTTTTCTACAACAACTAATGATCATCGGATTTTTCAGAAC 

GGTTTAGCATAGAGTTATGATGTGGGTTCTCTTTTATTCCTTTTTGCACACTTTCCTTGTCTGGAGGCGTTGGGCTTGGA TCCTTCATTCTTCATGAGGCTGATGTTTTTCCATTTCGGTTTCCTTAAGTGGTGAAGCTGCACAACCATGAAAGCAGTGA 5 TGATGGCTCATAGGTGTAGTCCCAGCTACTCAAGAGGCTAAAGGGGGGATATTTCTTAAGCCCAGAAGATTCAGACTGCAA  ${\tt TTCAGTGATTAGTTTATAGGTAGCCCCATTTCACCCCATCTCATTCTATAGCTCAGGTTGAAAGTTGAGTCATGAATTGGGTTCATGAATTGGGTTGAAAGTTGAGTCATGAATTGGGTTGAAAGTTGAGTCATGAATTGGGTTGAAAGTTGAGTCATGAATTGGGTTGAAAGTTGAGTCATGAATTGGGTTGAAAGTTGAGTCATGAATTGGGTTGAAAGTTGAGTCATGAATTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAGTCATGAATTGGGTTGAAAGTTGAGTCATGAATTGGGTTGAAAGTTGAGTCATGAATTGGGGTTGAAAGTTGAGTCATGAATTGGGGTTGAAAGTTGAGTTGAATTGGGGTTGAAAGTTGAGTTGAATTGGGGTTGAAAGTTGAATTGGGTTGAAATTTGGGTTGAAAGTTGAGTTGAAATTTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAATTGGGTTGAATTGGGTTGAAAGTTGAATTGGGTTGAATTGAATTGGTTGAATTGGGTTGAATTGAATTGGGTTGAATTGGGTTGAATTGGGTTGAATTGAATTGGGTTGAATTGAATTGAATTGGGTTGAATTGAATTGGGTTGAATTGAATTGGGTTGAATTGAATTGAATTGAATTGGGTTGAATTGAATTGAATTGAATTGAATTGAATTGAATTGAATTGAATTGAATTGAATTGGGTTGAATTGAATTGAATTGGGTTGAATTGAATTGAATTGGGTTGAATTGAATTGAATTGGGTTGAATTG$ GAACATTCTTCTTGGTGTAAATTAGTCACCAGTGTCTCATAGGGTTGGGCTGAAACTTAACACATCCCATCACTTTGA 10 TTGGCTAAAGTCAGTTACATAACCAAGCCCAGCTTTAGAAGGGAAATTGTATGCCTTACAAGGAGGTGAGAGGATTGGAA AATGAATATTTGGTTGACCAGACTTTTTTGTCCAGTTTGTTGTATTTGGTGGTGGCGCCAAATTTTTTGTTTAAAA  ${\tt CCTTGTTCAGATTTTTAGCNTTTCAGAACAGAACAGAGCTTTTAAAACTGAGCATTTGTCCCCTAAATTCCAGCACTGCGGC}$ CATGAGTAAAGGGTGCCCTGACCACGAGCAAATCATTTAGCTGGCTCACCTTTCATGCAACCTTGAATTCACCAGGAAGG AAGTTCATGCAGCCCTGGGTATGATGCCCTAATTTTGAGCCAAGCCAGCTAGAGTTCAAGTCCAAACCATTCCAMCTTCC 15 TAGCTTTGGGACGATGAACAATTTACTTATGCTTTCTGGGCTTTGGWITCCTAAATTATTTAAATNGGGGATGWATTACA TACATTINCATCATTTTINCACCTTCTCAAAGACCTTCTGGACNAATTCCCCCAATTCATAGCTCTGGGAGACAGTGTGTTGA CACTCTATTTGACCACATCTTCCTAGCAGTCTTGCGGAAGGTGCCACTTTGCGAACGATCTGTTGCTAGGTAATGTCAAT GACATGACTTTCAGTTTAGCACATGTACAGATGACCTTGTTTGGGCTTGTGGCGTTAATTCAGTTTCAGGATTTCCG 20 TTTGACAGAATATATTCAAGGGTGGTTTCTTGCTATCAGTTGTACCCTTGTGGCCACAGTTTTTCCAGATAACCAAGACT CACTAATATTTTCACAAGAACATTTGTCACCTAGGTCCAGATTTCAGAGGAAAAAAGTATACCGCCATTGVITCTTGTAT AAACTTTATAAAATATTTGGGGAACATCNACTANGCCACCTGCTTCCGAAANGTACTTNAGANTACTGTGTCATCTTAAT ANCAAGANCACTATGNCACTAATTAAGCTGNTTGTTGATGCTTTTTTTNGCCNTTTTTGACAATTAAAAATAATCTCATAC CACTGGATTAGTCTCTTGCCTTTCAATTTTATGTTTATATACAAATATATGTGCATACCAAATTTNTATATATATATATATA 25 GGCACTATAGGCGCCCACCACCATGCCTGGCTAATTTTATGTATTTTTAATAGAGACAGGGTTTCACCATGTTATCAGGA TGGTCTCAATCTCCTGGCCTCGTGATTCACCTGCCTTGGCCTNCCCAAAGTGCTGGGATTACAGGCGTGAGCCACCGCG 30 GTTATGCAGTGTTTGAAATAAATTTATTGCCAGCTATGGGTCATTTGGAAAAAGATCAATATGATGCATCAACATAACAA GTAAATGGNAAATGAATACAACCGCATGGTTTTCTNGAAAGCACNGGTTTCCTGCGCGGCTTCCAGAATTGCATCCCTGA NTATTANCCTGTAATGCTGTTGTAGCTTTGTTGATTGTTGATATTNNANCTTATGNAACNTTTCTTGCNTTTTCNAGAAA CCACCNNACCANCAAAAGANGGCAGTAACATTNAGTATTACATTATACATCTTAGGCATTTTTTTCCTTTGCCCTTTTCN GTAGGTTTTTGTTTGTTTGTTTTCTTGTCAGCCACTNTCATCATGTTTGGTCTCTCGTCTTTGGCTGTGTTTTTCTGT 35 TICTAGITATTGTGGGTGTTAAAAATCACTITAATGATTCAGCAATAATTAGGAAGTCCCTATTTGTGGGTGTTACTTTA  $\tt CTAACTACCAGGGATGAAAAGGCAGGTTTTGCTTTGTTATTACGTCACAGTTTCGTCAAGGAGATAAGTACTTAAATTGCTCAAGGAGATAAGTACTTAAATTGCTCACAGTTTCGTCAAGGAGATAAGTACTTAAATTGCTCACAGTTTCGTCAAGGAGATAAGTACTTAAATTGCTCACAGTTTCGTCAAGGAGATAAGTACTTAAATTGCTCACAGTTTCGTCAAGGAGATAAGTACTTAAATTGCTCACAGTTACAGTACTACAGTACTTAAATTGCTCACAGTTTCGTCAAGGAGATAAGTACTTAAAATTGCTCACAGTTTCGTCAAGGAGATAAGTACTTAAAATTGCTCACAGTTACAGTACTACAGTACAGTACTTAAAATTGCTCACAGTTACAGTACTTAAAATTGCTCACAGTTACAGTACTTAAAATTGCTCACAGTTACAGTACTTAAAATTGCTCACAGTTACAGTACTTAAAATTGCTCACAGTTACAGTACTTAAAATTGCTCACAGTTACAGTACTACAGTACTACAGTACTTAAAATTGCTCACAGTTACAGTACTACAGTACTACAGTACTACAGTACTACAGTACTACAGTACTACAGTACTACAGTACTACAGTACTACAGTACAGTACAGTACTACAGT$ GCGAAGAGATGTCTGAGCCAAATTGAAGGGTAAANCTGAGTTCANCCAGGCAAACTGANGGNAAGGGTACNTCAGGCTGA 40  ${\tt CCAGGAAACTCCTGTACTTCAAGGTTTTGGAGTGGGAAAGTTGAGGAAATTNGTAAGAGATCATCTCTGTCTCTATCACAT}$  $\tt CTAGGTAGTTGTGAGAAATGAGGAGATAATATCTTTAAATCTCCTACGGTGATACCTGGAACATGATGGTGCTTGGGAAA$ 45 TGTCTCTTCTTGAAATGAGGCTGCCTCGAAGACTCACTGGAACCCAAGCAAAGTNGTCTCTGCATTTCACTCCGAGCC ATCGACTTCTGTTCTGAATGTTAAAATGCAGGTGGCTGTGAGGGAGTCTTCTGAGTCATGCCAGCGTTTAANGGCGCTTTG CTCTTCTTTGTGCACATTCCTGCTTTTCTCAAAGCCTATTGAAANGCAAGGGCCATGTTTGCTGTTTTCTTTGACAGAGG AAATTITTTTTTTTTTTTGAGACCGAGTCTTGCTCTGTCACCCAGGCTGGAGTGCAGTGGTGCAATCTCGGCTCACTGC 50 CCGGCTAGCTTTTGTATTTTTAGTAGAGATGGGGTCTCACTATGTTGCCCAGGCTGACCTCAAACTCCTGCAGTACAGTA AAAAACAAGGACTOCTGGCAGATGCCCAGAGGCATTTANTAAGCAGNTCCCNATCACGAACNAAATTGCCNNAAATGCAA GGCCTNGAACNAAAAGACACAGAAAGGATTTCTTTANICGTAAGCCCCCTTTCTCCCATTCCCTTTACAATCCACCAAT 55 TTTGGTATTAGTAAATTATAGAACCAACTTTTGTAACACTATCTTGTTTCCAGAGTATATGAAAAATTTGAAGTTAAAAT TCAGCTCCACGAATACTGCAGTGGTGAGAAAATGGCGACAAANGATTAGTCTTCTGTGAGAAGTCTGCTAATTATTCTTC ATTTAATAATCACCATGTATGATNGGCCTTCATTAGAATGAATTCTTCTCAACACCTATGCCTCTTTCACCTCAGACATG CCTTCTAATTTTCTTTGGTAGTGTCTGCCCACCCAGGTGGTAATTTCTGGTCATAAGTCTAATTTAGTAGCCAGCTAAAG GATATCTGTGAACCCTTCGCAAAGAGTAATCTATTGAAAAGGAACAACAAAAAAGTATATCTGTGAACTTATTAAATGAC 60 TCTGTTCTTAATCATTGTTGTATATCCTTAATGCGCAGGACATGACACCGTATAACAAGTGTTTTAAAAATATTTTACAAT GGGTCTTGAGCATGTGGCTATTGTATTCATTGGGCTGGAAGCCAACCTTTTCTATAGCTGAGAAAATGGGTTAGCATAAT TCAAAATTCAATTGCTGTACCCTTTTTCATATGAATAGATAATACAGAATGAGCCTTAAATCTGGGTTGGAAAAACTAAC 65 AGGAACTGGTTTTATTTTAATTGAGTTTTAAAGCACTTCTAGGCCATCTCATTGTCTTTATAGTTTAACCCTTTGAAGTT TGTTTTTTTTAACCAGTAAATGCACTGAAACATGGAATCAAAGTCTCTTTCCCGTGGGCCCCTTTTCATTGGGAATAAAT GCTACCCATAGATTGAAGTAGTTTATACCAGTACATTTTTTTAGGTGCCTTAACTTACCAAGGTTATTTGTCAGGAAAATT ATCTCTTGTAACACCAGGTTCCCTACCTTTAGATGACAGGACTTAATACAAAAGTTTTCCCCATACCAACTAGTAGTGTA

AGTTGATTTCATATCCTTTPATTTCATAAAGTTTTGCTTATCGGGTTTGTCATCCTCTATTTGCAATTAAAATGTGTGGT  $\tt CTCGAGATGACCTTAAAGTATCTGACCCCCAAATCTAATCACTCCTAGCATCTGTGAAAATTGACAAATATGTCAGGTAT$ AACTTGGGGCATCAAAACATTGTTTTAAATATTTCGTTTGTAGACAAGGCAAAGATCATTTTCAGGTTAGTCCTCTGAGA AGGAACGCTGGGTGCAGAAGCATCTTTGGTTTCTCTGCTCTATAATCGGCACTCATTATCTATGGGTTTATACGAGCAGA ATGCCCAAAGTGTGTCAGGTGAAGGTAAAAATCAAGTAAGATCTATACTTTTGATAGCAATTGCTGTTGGATTATGTTAC GCTTGTCATCTGAGGTTACTGTTGAATATAGATAAAAATGTTAATTGTATTAATTTAGACAAGAATGTGGCTTCAATGAG TATTTCTTACAAAGTGGGAGTATCAATTTTTCTTAAATGTAGAGATTTAGTTTTTCAAAAATTATATTTTTTATATGACC TGACGTTGATTGGCTTGCCTACATTCTCTTTTGGTGTATGATGACAGTTTAAAAATTCGGATGCATTTTCCACAGAATTA 10 AGACGTTATGTGCAATCCTTGTGTTTCTAATTATATGTTGATCAATGACACCTTTACAAAACTGTCATCAATCTATTGGT CAGTAAACTTGTNTATGCATAGGGTTGNTTAGAAAAGTCTTCATCAATTTGAGCCAAACTGTGGCTCCCAGCTACTTCCA TCAGGGGTCCTTATTCCACCCTTTGATTGCAAAATGCCCTGAAGACCTGGTATGTCTTATGTCAGTTACAAGAGGCCCTT CTAGTGATGTACCGGGAACCTCCTATGGGAACCAGAGCTCTGCTAATTTTGGGGACAAGAAATGATGAAAAAGAAGTGCCT 15 TGTTCTTNGGGGCNATCACAGTCTCATGACAGAGTGCATGTTGTCAAATGCGCGTTTAATCTTCTTAAGCTCAACTTCAT GCAAGAGACCTAGGAATTCACAGAGTGAAGATGATTTCTCCATTCCCTTCTCCGAGCAGAGCTGTTGAAGAAGATGGGAG TTAGGAGAAGTGAATCTTTTGTTTTCGAAGCCTTTGTCCTTGTGAGTCTCTTAATTGGGGTGTCTTGTAATGCAAAGTCT TTAAAGATGTGTGTTCCTGAAACTCAGGAGGCTGCTCTATCCCATGGTTCAACCAAAGAACCAGGGCCAAAGCAGCGCTGCTG AAGGAACAACTGATTCTCTTGGCCCTCCTTAGAGTGAGGGTACAACTGGCTCCAAAGGAAATGTTGGCACTTCCAGAGTA 20 ATTCTGACAGTACTCAGATTTGCTTCATGTACCCATTCTAGAACCTTACCTACTCAAGTGTAAGATGAGATGCCACTGTG GTATCTTCAAAGGAANTTTAGAATCATCHTCTTNAATGCTCCATINAAGAAGAATTCTTTTTCTCTTTTCTCTGAAAAG CATCCCAGGTCATAAAATGTAATGTGGGATTGTAGGTTTTGTGGGAAGATGCACTTGGCAGCAATTCCTTGAGAGGAGGC CTTGAAATGTCAGGGTCCCCCATTCATCTTCCCAAGCTGGGATTGACCCAGTGATAACATAATGATAATGCAGCTGCTTT CAATGTCAAGCCATCAGGCAGCGGGTTGGGGGGGGTTGCTTGGCCCCAGGAANCCCGTNGCCCTNGATGTGGAGTTGGTAAT 25 CTAGAGGGTTTTNGAGTTAAGTGCTTTTGACATGGAAAATCNAGGAGCCAAGGGCGNAAGCTGCCTTTTAAATGCTCTTT CTGAANAGAGTCCACTGCAGATGTAATTGAGCCTCTCAGGTGAAGAGCTTTATTCGAGCAAAGCTGGTTAGTGTTGCATA CCTGTTTGGGGGAATATTTTAGGCATCCTCACAAAACTGCTATGTGACATTGCTGAAGGTNCCCCAGCCTCCTTGCTCCC AAACACTTCAAGAAGGAAAATGCTGTTGCAGAAATGTTGTCTAAGCTTTACCATTCAGTGTGGCCCAGATCAACCTGTCC CTINCTITITGTGATCACAGTGTGTAATTATAAAGTTATTYGTGTGTTTGGNTTTATGNTCTTCCACACTGGACTGTAAG 30 ATCCATGAGATCTAGGACCACGTCTGTCTTGATCATTTCTCCTTCTCTAAGACTAACACAAGGCCTGGCATAATCATTGT CATCACCATCACCATAGCTAGTATTTATTGCCATATACAGTTATGTAAAACATTGTAAGAAGTGCTTTACATCAGTTATT  $\tt CCCAACCATGGGGTCATGGGTCAAAGATGGTCAAATTGGCCAAGATGAAGGTGTTTGCATTTTGGAGACCAAGCACTTGA$ ATCCATAACCCCAAGATGTGACTTTCCAGGCTTGGGATTTCGCAACACGTCGCTTAATCTCTTAGCTTACATTTTGTCAT GAGTAAAACTGAAACAGTAATTCCCATGTCCTGAGTTTCCTGTGAGGATTAAAGACAAGGACTGTTCTAAGCCCGGCATA 35 GGTATGCTGGAAATTTTCCATTCATCTGGTGATGTGATCACTTGGCCCGTGTGCACGTGTAAAAGTTCAAGCTATATGCTT 40 CCCGCCTCGGTCAAAGCACACAGTGGGTTTTCCCAACAACTGAGGTGCCTGAGGGTTGGGTGCCAAAGAGGCAGAAAGGC CGAGATGACCCCTTGACCTAATTCCCTATTCACCTGAGGCCTTCCACCCCCTNGGCCNTGTTCNAAAGGCANNGTTACGG ATCNITITACINCAAAANCCTGAACCNTAAAAANGAAATTCNTTTANGCCATGTCCNGTTTGAATTAAATTCNAGCGTCN AGATGTACAAGGCTGNTGGTTCTGACCACCCCCGGCTATTTTTGACCACAGGACAGCTTAAATGGTGTNGGCCCATAAA ATGTAATCTGCAAACTCAGGCTGAATGTTGATCTATTTAGGGCCCAAGAGACACGGCCTTGGCAGCAGTTCTCCCTGA 45 GGTAGGATCTTAGGTCGAATGGAGACCATCACCCTGGCTGCCAGCCCCAGGAGGCTGGAAATTCGTTAGCATTCTTTATC TTTGGGGATCGGCCACTTACTTGTGGGGTTGACTCTTACAGCCTTTGACCACCTCCCAAAAGCTGGATTCACTGATGGGC CCCCAACTCAACTTTCACTGGCCAAAGTACTTGGGGTTAATTTAGCAAACCCCAGGATCCCCAGAGGGTCCCTCGGTATT GTGGTTTTCTCCTCGCTTCCACCTTATAGTGGCTCCACCAGGACCTCTTGANCTCAGCCAGCACTCCTTCTCAAGTCACT 50 TTTTTTTTTTTTGCCTAATTTGTGCTTGGCTTCTCCACAGAGGCCTGGTTCTCGCTTCCCCTTCCCCTGCAACCCCAAGGCA GGGGGCAGATTCCCGTATCATGGTGCTNCCTTGGCCTGATTCTGTGGCCTTTTATATTAGAACTCACCTTCTGGAATCTTT TATTGTCTTGTCTCTCCAAGCTGCGCATCTTCCTTCCCTTCAGAGGTTTGGTGATCAGCGTGGTGGCTCGTTTCTA TAATCCCAGCAGTTTTGGAGGCCGAGACTCGGGGATCCCTTGAGCCCAGGAGGTTAGAGACCAGCCTGGGCAATATAGCA 55 TAATCCCAACACTTTGGGAGGCTGAGGTGGGAGGATTGTTTGAGCCCCGGAGTTCAAGACTAGCCTGGGCAACATAGCGA GACCCTGTTTCTTAAGAAAAAGAAACATTTAATTAAAAATTCAGAAATTGGAAGTTGCATTGAGCCAAGATCATGCCAC ACTCTAGGTAACCTGAGGCTAGACAAACCTCTCCATGTCTCAGTTTCCTTGCTGGCAAAATGGGGAGGTAAGGCCAGATT 60 ATGCTGTTTTACTCATTGTCTAATTGAATTCTCCAACAACCTTGCAATACGCTTGTTATCTCCATTTTAGAAACGAGAAA ATGGTGACTCAGATTAAGAAACTTGCTCAATGTAACCAAGTCACAATTTTAATATTAAAAATAATGAGCATTTATTAAGT GCCTGTTGAATGTGTAGGATTTTGCTAAATCTTTCACATAATCTCATTTCATCTTTATCATAGCCCTTATGGTGAAAATG CCATTATTCTTTGACATAGAGGAATTTTGATTCAGGAAGGTTAAGTAATGTGCCCAGTATCATCTATGTATAATTGATNG GGTCTATAATTTCAGACTCAGGTTTGTTTAAGTCCAAAAATNCATGCCATTATGACTGTGCATGTTGCATGCCTTCA 65 TATCCCCAATGGAAAAATCCCTTCTCCCACTTTTCTTAACCCTACAAGATATGCCAAGATTCTATAGCATCTGAATTTGA AAACCTCTACTAATTCATGAGGCAATCNTATTTGATAANTGGCATGATTTAGTTAKGTTCCTTTTTTTAGAGNATAAA GCCTCACCCTGTTGCCCAGGCTGGAGTGCANGTGGCGTGATCACAGCCCACTGNTAGNCCTTGACCTCCCAGGCTCAACC TTTTGTTTTTTGTAGAAACAGAGTCTCTCTATGTTGCCCAGGCTTGTCTTGTACTGGGCTCAAGCAATCCTCCCATCTTGG

CCTCCCACAGTATTGGGATTACAGGTGTGAGCCACTGCGTGAGGCCCAGTTAGTATTCTTTACATTTTTAAAATAAAATT TCAGAGAAAGCAACCAAAGGGAGCATAACTCTGATAAGAATAATAAAAAGAAACAATTCAGCAACTCTCTTACAGATTTT TATCATCATCCCATTCATAATTGATTCCAAACGTGCATGAATCTTTCAAGATAAGTGTCTTATTGATTATCCTGAAAACA AGCGATCACTTGGTGTCCTGAGATTCGCTCACTGCCCTCCCCTGATTACCGTAAACAGAGATGTTGATGAGAAGAAATGT 5 GGAGGTGCTTGATGGCTTGACTGTGGCCTTCACCTTGCTTTTTTGTGGAGCTGGATATAGACATTTGTTGGCCAGCTAATA CTGTCTTGATCTGTTATATGATCCTTAGGCCAGGACTTTTTCCTGGTAATTGTGCAAAATGTCCCAGTGAATGCCAATTC CTTGCTGTCAGGAAACATTAAGTTTCCTAAGTGACATCCTTTTTCTGCATGTTTACTTATGGTTATGTAAATCAAGCGGG CCTCCCCATTGGAAATGATGGCAGTGGTTACAAGGGACTTCACCTGGTCTTTTGTAGTTGTGGCAAATAGATAAGATACA 10 AATGTGACCTGCAATTCAGTTCAGCATTATGAAGCTGTATCTGCTCCCTGGGTGGTCACAGCCCTGCTTTGTGGCCC TAACCCTTGCCTGCTGGCGGGCCTTGCACAGGTGCAGAGAGGGGGGTTAGTATTGGCAAGCTAATTGGATAAATGGT GAAGTTTCCCCTGGGTGGCTCCATTGCTCCAGGTGAAGCTCTTGAAATACTCTGTAGATGACAATAGCCTCAAACTTGAA CAGGTTCTTGCAGTTGGCAAACAGAAGGAGACCAGACTCATAGGTTTTGGGTGCGGATAATGGATAATCTGGCTATTGCA TTTAANTTCCCAGCCTGATTTATTGAGGCTGCCTTTGGTGAAATATTGATTTATATCTTGGGGGGCCAGGATGGGGCTAC 15 TCTGTACTCAGATGAGGCTTGCTCTCAGGAAGTTCTTGTTCAGCAGCAAAAATCTGCCCTGTTTGGGCTCTGAAAGTTAT TTTTGTAGTGGCCTCACAAGTTTCTTGTAGCAGGTCATGAAGAGGAATGAAATACTATAATCACAGAGCTTGCAGAAGCT GCCTGGAGGACCAGTTAGTCTATTTTTTGTACATGAGGATACTGAGGCTCAGAGAAAGTGAGGTCATTGAGTCACTTGAG TTCTTGTTGAGTGTTCTTTCCTGCTGAGGTGTCCTAGGTGCCTCTTAATGCCTTTAACATCTGCTAAGAGTATGTCACTT ATTGACGTAGCATCACTTTATTGAGCAGCTACTATGTACCAAACACTTAGCATATGCTTTTTGGCATTAGGAGCTGAACC 20 CAGAGTGGTCTCTGTGGAGAGGTGCAGGTTTACCCAGGGTGGTGGTAGTGGTGGTGGTAGTGANTAGTGTTGATA GAAGAAGAGGAGGAGGAACTTCTCAGGAAGAAGTNGGCAGTTCCCTCCTTTGTTTCTTATCTCTNACTGGTTAGCAG CCACTCNTCCAAAGCCTCTTGCTGGGAATGTGGCCATCATAGAAGTAAANTGAGACATCTCTTTCATCTGNCACCAACCT CCTTATTAAGACCTTATCAGTTACCTGTAGATTCTCCCACTGTTGTACTTGTTTCTCCCTCAACCAATTGTATTTTAGCT CTCAAGITTTGGCAGGGTTGAGTCTAGTATTTCTGTTGGGATCCGGGGAGCATANIGGAGTGTTGTTTGTTATTTTTTAG 25 AGTTTCTTATTGCGGTAAGTGCTCAGGAGGGAACAGAGGGAGAAGGATAGAGGAAAAGCAAAACAAAATAGAAAA ATCTAGTTGTGATTTTATTGACAGTCATTTCTACCTTGTTGGTATCCGCAGAGGTTGTCTTGAAGGGGGGCTGATGCCTTC TTTCACTAGCTTTATGTGGCTGGCAGTTCTGTCCTGCCACTCTTTTCCTCATCATCTCAGCCTCCCTGCCCATGGCACTC AAGAGTCGACCTTGGRCAGAACCTGCAACMTCTTCAGCGCCTCCCTAATGAACTCCTTGCAAGGGCCCTTGGTTAAGTTA 30 CAGTAGAGAAGTGGTTGCTTAAGCAAGTAGTTTCCGGTAAAGGCATAAAGATAGCCCATAATTGGGTGATAAAATACCTG GATTGCATCTAAAAATAAAGACTTGTGAAGGTAAAACTNGTAGCTTACAGTGTGCGANCTGTTTACCTTCTTTTGGTTTC TTCTCATTTAATAGGTTGGTCATCTCTCTGCTGGCTTTTTTCCCCCTTTTTTCTCCCTTCTGTAGAATAACATGTGGACCA TTAACTATGATGCTACTTCTTAGCTGCAAGGGGGAAAAATGGAAAACTCCAGGGGAAGAGGGGTCTTTACTTAGGGAGTT GGCATTTGTTGGAATTTCCCCAAGAACATTTCATGATTAGTGACAGGTTATCTTCTAGTTTACCTGAAGGCTATGGTCACT 35 CAACAAATTTTGTGTTGCTTCTTACGTGTCACGCACTGTGATAANGTCCTAGGATTATAGAAGTCAATAAGCTATGATGC TCTCTCTCTCTCTCTCTGTTTATTATAGATAGAAATAAAAAAATTATAAATAGAAATTTATTTCTCATGGTTCTAGA GGCTGGAAAATTCAAGATCAAGATGCAGACAGGCTTGGTGTCTGGTGAGGGCTGCTTTCTATCCTTCAAAAAGGCANCCN ACGTTGCTGTGTCCTTATTTGGTNGGAAGCAAGTGTGTTGAATATTCTAAGAGGAATCTGAAAGTGTTATAGTATTAAGG 40 AAGACAGATCCAAGATGGTGGCNAATGGTCAAGAAGGGTGCNGGGAAGAACCCNTTCAACTCTAATATTNATTTGAGCTN GCTCACTGANTAAATAAATAGGATTTIINCCCAGTINGGGGAAGNAGGGAAAGGTTTTTAGGGAGCAGATTAGACAAGAAA CATTGAAAACACAAAGTGTATTTCTTGATACTTGTTAACACTAGGTGTTGAGGAGACATAACCNAAGTTCTCCTGCAGTT TNGTGTGTTAANGGCNAGATGGAAATGTCTTNNGTAACTNCAGTAANAACAGTTTNAGNAAANTTTNAAANGNCCTTTGG NAGAGNAGTAAGTANTTNGAGNAAGGCANCATCTCTACGTTGTTGACGTGAANGGAGTTGCAAGGTCGGGTAGATGGGAT 45 CAGTGCCAGGTCTAATGGGCTTCATTTGCAAGACCTAATTTCTAGCAGATCATGGTGTAAGCCTCAAATGGGAGGTGTGC CTGGGATGGTTGCANGAGGAGTTGTTAAGAGCTCAGACTCCAGCGTTTAGACAACACCAGCTGCTANCAAAGGACACTGT GCATTTCTAAATCTGAGTTTCTGCACACGTANTGGAGGAGTAATATGGNCACCTCCTCNATTTGGTTGAGATGNCTCTGG GGTACACGTACAAGGCGCTCAACTCACGGTGGCTCCACCAGTATGAAAATGTGTTATCTGCCCTAGTCTGAAGTACAGAA 50  ${\tt CCCNCCTTTCTCCCTTTTTCAAGATGGTTTTAGCACNTTCCAGACATTATNAACCAGATAGCCTATTGCTAGAGAACAAA}$ GCACCTTCTCTCTNATATGTACCTCTTGGGAACAAGGGAACCTTTCCCCNAAAGCCCCTCAACACACTTAGGCTGACA ATGGNAAGAGTAACAGCCCAGTACACAACTGTCTCCAGTGGCCAGCACGTAGACCTTCCCTCACACTTTCCACTCTCTGC ATCCCCTCTCCCTCTCATGTATCTCTATTACATGGAGCCTCACTTTATAGTCCTCATTAAGAGACTGTGGGGTGGTAGA 55 CAGATAACAATGTTAACATCAGGCAAATGGGTTTTGGATTTAGGTTACCATCATTTATCTTCTCTGTAACCTTAGACGAG TTGCTTGAGTTCTCTGAGTCTCAGCTGACCAAGCTCTAAAATGAGCATAACCATATCAGTTTGTGTTTCCTGTTACAGGG AGAAAAGACTGAGATAANCTAAAGTACCTGATTGAGTAACNTGCTCTCTGAAGGTGGAGGCTGGACTGCTTCACTGGACA NNGGGTGGCCTGGGGTTATTCTAGTGCNAGTGGTAGCNTGGTGNACAAAACTNCAAAGAAGATGTAACNTAGAGAAAAAAG TACTCAGTGCAGCCTCTGTGAGCTACCACCACTGCCMTCTAGTTTTCCNAGAAAACCACCACTGACCACTCTCTGTACAG 60 ATGCGCTCAAGCGACCATAACCACCAGTGTTCCTAACAATGCGCCTATTGACTTCTTATTTCNAATAGATATWCCAGANT TTATTNATCCCTCAAGGTAAGCATCGATTTTACCTTTGTCTCAGTCAATATTTACCTCTGAGGTCAATACGTGTNGGNAT ANTTCACCNTCANGCTGNCAGNTCNAATATCCANNTTTCGNTATTACNAATNATATGATGTGNCATANTGTGAAAANTAA AGAANCAGCATNGGTACAAAAAAGGTCTGCTAGGCAAAGAAGCTTTTTGCAAAGCCGATGTGTTTTTGTTTTATTTTTTTG TTTGTTTGTTTTTACTGTGTCACTTTTTTAGAGGTCAGATTCTATTTCACTAAATAGGACATATGTGTCTTCTGCCAAGAT 65 GTGGAATTTTGGCAAGGCTAGCATGATAACAAATAAACATTCAAGCAGTCACTTAATGATATTGAATTGAACACCATTTC TCAGAAGTTCCTGTATTAAATTACAACCATAAGAACATACACAAGCATGCAGATTGTAAGTGTGATGAGAATGGAAACAT TCCATAGGACGCAGAGTTATTCCTCAAGCCCCTGGACTCGCAGAGAATCAGGTGTATGAAGCAAGAGGAAGAAGACAAGA ATCAGGAGGCAAANGAGAAGGAAGAAGAAGCCTCAGTGGGGTTGCTTCTTTTTATTTCTTAGAGCCAGAGCTGGAAGACA AGGNCCTGGCATATTTTGGCAGGCCTGGATCAGAGCCTAGGTGTGAAATTAGGAATTGCATTTGGCTGCTAACAAG

GACCCAAACATGGNTGGTAAATTCTTCCACATAAAACAACAGAAAATAAGTTGTTTTCTGGCCCTGGGCTGGGCTGGCCA NCTINCCNACCGTNCATCGNATGATCCGGGNCTCCTTTTINCTNCTTTCTGCTTTNGTGACATTGCTTINCTNATCTTCNATG ATAACTCGCNTGCCCAGAATNGACCAGGCAGCATGAAAACGNAAAANGGTGGAGAGGGAACTAACTTCTTCCCTTTTGAA GAGCTTTCTTAGGAGCCCCACCCAACACTACTGCTTCTCCCAGTGGTGGTGATTTAGTTGCTTGAGCACAGATAGCT 5 GCCAGGGAGGCTGGAAAGTACAGCCTTCAGTCCTAGCACCAATGTGTCTAGGCAAATACAAAAGCTCTTTAGCCAAGGAA NGAAATGACAACGAATATTTGGGANCCCACTGGGAGTTTGTGCCAAACCAGGTGTCATTGNCCCTCCCCACCCTACCTTG ATTATATTGCCCAGACTGGTCTTAAACTCCTGGCCTCAAGCAATCCAGCCACCTCGGCCTCCCAAAGTNGCTGGGATTAT AGGCTTGAACCACCATCCCTGGCCTTGATACTGATATTTTATTGTCCTAACTGACAGTTTTGTCTGCCCAGCATTTTCCC 10 CCGTCACCCTTGTACTACCCATTTTCCTTTGCCATGCACCTGTCTTCCTCTTCAGGATTGATCACAAAATCAAAACCAT TCCTACCAGCCAGAGGTGGGCACATGACCCAGGTCAGACCAGTCACAGTTCCTGATTCCCGGCCACANGTGCTTGATGGG GGAATGAGCATATATCAAACCAGGACAGTCCAAGTCCTTCCGGGGACTTTGCTGCCACAGTTGACAGGGGGAGGTATTTG CATAACTTCACCACACACACGCTAAGCTGGTGATCCTGCTGCTTGGCAGCATNCTTCCCAGCGTACAACAGAGGAAAACTG 15 AANCAAAGATAGAGCTAGCATGATTGCAAGCTGAGGACATACGAGGAGTCCCNTGGGTCAGCTGGGCCATACATTTGTAA CCTGTAGACAAACAAAATGATCTTTGGGTTCCTTCTTTAGCAATTGGAGTTGGAGGAGGATGACCTTAGTTTCCGTCTT TGTCCCACTATCATTATATCCAACTIGTGTAATTAGAAACACTATTTAAGTCTCAGTTTCGTCTCTGTCAATTGGGAAA ATATCGTGAGGCGGAGATGTGAGATGTGATCACGTTTATAAAGTCTGCGGCAAGAGGATGATAAAGTCACTTCTCAACTC CTTCTCAACTCCTCCTCCTGGCTTATTAATGCCCATCCTTTAACCTGTCCTCTGCTTTATCTCTTTGGAATCCTTAGGGCC 20 TATTCTTGCATTTGCTGCAGCAAAACCTGACCTCTCTTTGTGTTACCTGAGTCTTGACGAAGAAGACTGAGGAAAAGGCCC CCCCCCCNCCCACAAATIGTCCCGTTGTCTCTTGGCTGGTCTTGCCANGCTGGCACACACGCTTCCTCTGACCACCCTG CTAGGTACAAATCCCACATGAAAAGTNCTCAATCACCTGGCTCAAACTCATAGTTTTCAGGTGGCATAAGCCATGGCATT 25 TTCACCTCCTTTCCTGGTTGTTTCCAGAAGGGGATGATAGCCCCAGTGCAGTGGCTCTGTATTTCTTAGGGCAGCGTGGG ACCTCAGGGTTTGTCATGGACCACACCTTTCTCCTTTTGTCCCTTTTTTATAACTCATAGGCTACCTCCAACTTGACACTTA TTTAAGTTTTTATTTANTTTANTTTAGNCANTTCNAGAAAANCTCNTATAGCCTCAGTCTCTCGGGATGTAAATTAAAG AATTATAATTAAGAGAACCAGAAGGGCCTGTCTCTCAGGAAAGCAGTGATTTCCTTTCACAAATAACCCTATCCTTACTGT 30 TGAAGACTTNGCGGAAAAGGGACATGGCCCNAGGGAACCAGAGTGGTTTNGGGAAAGCACTTTGTCAANGAGGCTGGGGG ACCCCAGGGTGGAAGTTGCCATGCGCATGAGGCTGTGTTAGCAGAGGCAGTGGCAGAAGAAGACATTGCAAACCTGCAAA TCCTTTTTCCTGAATATGGAACCAAAGCCTGTGTTTTTCTTGCTCACATGTGAGTCTTCTCCTTGCTTCAACCCTCCCG 35 CTGACAGCCACAAGACTCTGCCTCCCTGCAGCCTGTGGAACATAATATTCGTTGGGATCATACATTGACCAAAGATCCGC CATGTCTTTGCAACTAACATACTCACTCATGNACTTCACGTGGCTANTGTACAAGACCACNATCTCNTCAATGGNTGAGG CCCCCAGCTGACCAGTGTGGATGTCTTGATGATGAGCCATACTCAGAGTGGCCCTAGGATGGCTCCTCAGATAGCTGCT GGCAGAAACCTGCACTCAGTACATCTATACATGGTGTAATGATTGACTCAAGATAATTAGCATAGCCATCATCTCAAACC 40 TTTATTATTTGTGATGAGAAGATTCAAAACCCGCTTTTTGAACTGTTCTGAAATATGCAATACCTTGTTGAACTGTAT TCACCTTTCTGTGCAACAGGGCACCAGAATTTATTTTTGCTATCTAAAATATCAATTAAAAATACAATAAAACTAAAAAG AAACCTGAACTCAGGAGAGTGGAAAAGAACTTCAACATTCAAAGGGGATAAGACATATACTCAGAGTGGGAAAAATACTA AATGGTAGGNAAGATGAGAAGTTTTTTACTCTTTGTTGTTTCTCCTCATTTTTTTATATTCAAAATTTCTAATCATGTGTG ACTATATATGTATTATACATGGTAGGACTTATTTTTTTAATGTGAAAGAATATAAAACAAAATACGANTATTATCTTTTG 45 AGTGATATCAACAAAACAAAACATGATATCCAAAGTCACCCTGTATGGTTGGATACTTTGGGTTTGCCATCTTTTNCNTT TGCTGTCAAGGTCTTGGCCCTTCAAGAGCATGTAGTGTGGTGGGGGAAGGTGTACATCAGTGAAGAGGTAATCCAGGTCAC GGTGGGATGACACAGGCTGCTGTGCCAACCCACAGCAGGAATAGCCAGTCCTGCCCCAGCAGGGCGTATCAGGGGTGCTA AGGTGACTTCCAAGATTGAGGTTGGCGAGTTCGTGACAGGTGTGCAAGATGGGGTGTTCCAAGACTGGGGACAGGACAG 50 ACACGGACTGTGTCATTGGAAGCCAGCNAGGGNAGAATCNAGTTGAGAGGGTAAGCCGGGCCNTAGTAGAAAGTAAGCGAA GCCCTTTCATTAAGTGAACGAAGGGTGCATGGTGAGTACACAGCCATGAAAATAAAATGATATAAATCAGCACGGTTTCA ANTCAGCCAGCTCTCCAAAGCAAGCCCCACACTCTCTTGATGCTATCCTCAATAAACATGCGGTCTAAACAGTAACCATG 55 TYCTAGCTATGCAGATGCAGTTTAAAGACAAATCCTTTGAGCCTCCAGCATGCGATCCCCAATCTCATTGCTGCNT CCCCTACCCTCTCTCCGCTAGAAGCGCTGGAGCCAGGTGCTTACGACCTGGGTGCTAGTATCTTTGTGAAAACTGCTCCT GACCTATTGCTTTGTTTATTTTAGCCGGTGCCTTTGTAGAGGGAAAACANGCTTAGCAAGCATTTAGTAGGTAGATCCAA AGTCCCCAGGAGCTGTTGGGAAGTCCATAGGTGCTGTTTCCATTGCTTTTTCATTCCTTCATATATTAATCAAGGAGTCA GTCAATCAATTAAACGGATACTATTAGCACCTACTGTGTGCCGGGCACTGTGCTTGGGGCCCATATGCACTGCTGATTCAT 60 GTTGCACCATTTTCTGAGCAATGTCTTTGGTCCACCATTAAGCATTTGTGGCCGCCCACACCACAATATGCTTTGCTTTC TGCTTTCAGAAACAATACTGGTGACCTGTTTTAAGAAAAGCTGAAAAGCCAGGACTTAGATTTTTCTGGAAACCTTCAAA TTAACCICATTAAGTTTAAAATTGTTTTTTTCTCGTICATCTCTTGCTTTTATGCTTTCCAAACCCCTAAATTGTGGT GTATATATATATATATAAAATATATTIYCCATGAATATACTGAATGCTAANGCCCTNCCCCACTTTTTTTTCNNTTTT TGTAAAANCTACTGAGTTNATGTTTGGGTCATGTTTTGCNGGTATGCCCTTTAATAGTGTAGCTTTAGAAATGCAATTTT CAGCCTCTGCTTATTAGAATATGATAAAGTATTCCTGGTCTATGTCCAGCTCCACTAATCTCCAGACTGCGCTTCATGAA TTAAGCATGAAGATTTTAGTCAATGTGCTTTCAAAGACCAATGTTTAGGGAATCATGGATTTTCTACAAGCTGAGGGAGA

NAATCTATAATAGGAGGAACTGATTTTCAAACATCATATTCTCAAGAAGAAATGACCACTTCTGGCCCAGAAACAGAAAA TATTTCACTATCAGAATTTTCTAGAACCAGTTAAAACCACATTGTGCTGTTAGGTTTAATAAACGGATTGTGTTTTAAGA TGTGTAAGACTGTCTGTCACGTGGGAGGATTTCAAATGACTGCTTATTTTTGGAAAGCTCATGTAGACTGGGTTAAAATCG AGAGGGGAATGCAAATTGAATTTATAAGGTATTATTAACTTCTTCCTCTTTTCCCCCCGCCCTGGCCCCTGTGCATTTTCG TICATITICCTCTGATACAATTCAGCAAATAGCCAGATATTTCTTGCCATGCCGAGAGCTTAGTTGGGGGAGAGATTTTG 5. ACCAGGCAGGCTCTCAGGTCGGTGCCATCGGTGACGCCAACACACCTCCTGGCTTGGTGTTTTTGTGGCATTTTGGCAGG CCAACGITITIGAAAAGAAATCTCCTTTCAAAAATCACAGCACTGGTTGAAGCAGGAGATATCTCTCCCTTTAAATGCAAAAGGAGTTAATATGCCAGTGATTACAGTGTGCCTGGAAAGGTCACTGGAGGCATTTTTGTCTGGGGCAGCCCCTGGAGTCT 10 AGGAAGTTTCAGTGATGCACTTAGGCAACCATTAAGTGGCAGGGTCGGCATTGAGGTCAAGACTGGTTGGACCCCTAAGT TCAAGCTGCTCTCAGCTAAACTCCAGGGGTTGCTGATGGAGACNTTCATCCCCTCCTCCAGTTCCGGGATCAAGACAGAA ATGTAAATCACCTCCAAGAATGGGTCTGCGTCTTGCACATTTTCCTTTTGAGAAAGAGGGAAAATTCTCAGCTGGTCTAGC 15 CTGTGGCCATGGCTGGGGAATTGGCCTNGTCAGTTCAATCNAGGCAGCCCCTCTGACTGGTGTTTTTCANCTAAGCTGGN NCCCCANTGGATNGGCCCTNGGTCNATGTGTAGACANTGGNCCTCAGGANNGGGCCACATTCCNTCTCATTTNCCAGGCC TNCCCCACTTAATTGTTCCTGACACAGTTTGGGGAGAAATGCAGCAAAAACCCAGGCCTGCCAATCAACATTTGCTCCCGA 20 GTCTCAGAGCGGCCCCTGAAGAGACAGGTTGGACCAAGGGACATCCACAGATGCCTTGTGTTTAGGAAGTGGGGTGTGGG CAACAGAGGGAGAATTGTTACCCCCGGGAGACTGGGGGTGCTGAAGAAGAGTCTCAGTCTCTGCACTCTGGGTCTTGCCA AAACCTCTGGGNATTGGGTGTGGTGTCCATGTTGAGGAAGGGACAGTGAGCTCTCTAAATGACAGTGGGTCAACCACCGC ATTTCTAGGACTCAAAGATGCCGTGGGGGTGTATTAGTCTGTTTCCTTGCTGTTGATAAACACATACCTGAGGCTGCATA ATTTATGCAGGAAAGAGGCTTAGTGGACTCACAGCTCCACATGGCTGGGAGGCCTCACAACCNATGGTGGAAGGCAAGG 25 AGGAGNCAAAGTCATATCTTACNATGGTTGGCAGCAGGCAAAGAGTGAGCTTGTGCAGGGAAACTCCCCCTTATAAAACC ATCCGATCNTCGTGAGACTTGTTCACTATCACGAGTAAAGCACAGGAAAGACTTGCCCTCATGATTCAGTTACGTTCCAC  $\tt CGGGGCCCTCCCACAACACATGGGAATTGTGGGAGCGACAGTTCAAGATGAGATTTGGATAGGGNACACAGCCAAACCAT$ AGATGACGGAAACAGCCCCCCAGCTCCAGCCATTTGTTACTGGGTTGTTTCCAACAGAATCAAGGACTCGGATTTTTATG TGAAGTCATCTCCATTTTAAGTATTCTTTTCTTTCCCCCCAACCCTCCGTGGGTTAAAGCATCCATGTTTACAGAATGAA 30 AGATGAGGCAGGATACCACTTCTCCTAGGGATCATCATCATTTTGTGGGGCTATAGTCCAGAGAGGTGAAGGACCCATC ACTGCCCTAGAACGACAGCAAGACAATAGGGCCATGAAAGCATAAGCCCTGAAGTCTGGACACTGAGAGAATTCTAGGCT TGACTTCTCTGTACAGCCATCTTGGGAGTNGCTCAACCCTTTGAATCGGATGTCTAGAATGGCTTCAGATGTCACTGTGC 35 AGGTGACTCACGCCTAGAATCCTCTGCCTATCGTGACAGGGAGAGCCTGTGTGACCCCTGTGGCCATCTCAGTCTCTGCA GGGCATCTGTAGCTTTGGAGGTACCTGGGCAAGAGACTGCCTTTCCTACTAGAGCTTCTGCCATCCCTCTGTCACTATTT AAAGCATTGCCTGCACCCTCAACCTCGTTCAGTTTCCACATAATACCTGGGGCAGGGATGTAAATACCCTGATTTTATGT GTCAGGCCCTTCAGGACTCAGGGTGTATAAGTGACATCGCTCCTCGCACAGCAGGGATGGAGAGGCAAACCCAGGTTGGC CTCTCTGCCACTCATATAGAACTCCTTTATCACCAAGATTCCTTTCTTCTTCAGTGCCACCTGCCTTATTTTACTCACCC 40 AGAAGGAAGCCGGGTCCCTCTTTGCCCCCTTTGGGTGTTTGTGAAAAGCAAGTTGTAAACACTGAATTCTATAAACTGTTG AGCACTTTCCGTTAAAGGGGAAGAAATAGCTTTACCCGTGGTGTAAAATATATACTTTCTAATGTAAATCAAGAAGCTAT 45 GAATACCATAATAAGAATGTGGTAGTATATTAATTGATGGAAATTGTAGAGTGGAATATTCATAATCAGCAGAAGTCTTT TCTCTGGAAGGAACAAAGGATTAAGTTAGGGAGACAGTAATGGTATTGTTAGCAGGCTATTTCAATGGTTTTCTCTGCAG AAGAGTAGGGAAAGGTGACATTCCAACTGGGAATATTCGACTCTGCAGATCCCTACTCGGAGTTTTTCAGCCCTGTTTTA AGTGCCGAGCTGGGTTTTGCCTCATGATCCAATTGTTTTATTAGCGAAATCATCTGTTTCATTTTGCTTTGGTAATA GTGCAGTGTCTGTCTAACAATAAATTATAGAGTCAGGCAAACAATGGTTTCGTATTAGGGATATAATGAAATATCTTATT 50 AAAATGCNAGACTTCCTTANGGNTTNCCTNGAAATTAGAGTNNCTTATTTTAAAANNTGATTCTNGTTNGGGCTTNATTA CACGCTTTINGAACTAATCANCACTAGTAGAATCTCTCTTTAGTCAGAGCATAGAGGACTGTGAGAGTTACCTCTTACTT ATCTGACAGNCCAGACTGGAGTGCAGTGGTGTAATCTCGGCTTACTGCAACCTTCACCTCCTAGGTTCCAGCGATTCTCC TGCCTCAGCCTCCTGAGTAGCTGGGNACTAAAGGCACGTGCCACCACTCCTGGCNTAATTTTTTATATTTTTAGTGGAGN 55 GGTAGCATCATCCCTTTGCATGCAAAAGATAAACTGAAATCTGAAGTAGCCATATCCTTCCGGCCAGGTTTTTCAAGTGG ATGCTGGGCACTGCACAAAATGGTTTACNATGGTTTATCTTGTAGCGTTCCATTTAAGTCTGCTAAGAGTAGATGCTATC 60 ATTCTCTCCATTTTACAGATAAGAAAATTGAGGCTTAGAGAAATTGAGTAATTTTTGCCAATCCTGAGACTTGAATCTCC GCTCTGTCTTCTGCATACACTTTTTACTTGTCATTGCTGATTAGCTTTCTCTTTCCATCTCCTGATCAGAACCATTCTG CGTTCTTAGATTCAACAAAATGTAATACTCCACCTTGCCAGTATCTAGCGTGTTTTCAGAAATTGTGAACGGGTGGAGG GCAAGGCTCTGTGCTATGCTGTTTTIATGGACATCATCTTCTAACAGCTTCTCTGCCACACCTGGAGAAGTGCCAATATCA 65  ${\tt TTTCATGGCACAGATAAGGCATTGGATGCTCATAGTTTAAGTCATCAGGTGGTGACTGGAGGAGCCAGAAGGTCCCTTT}$  ${\tt ATCAGGCAAACTACATGCATTTTAAAAAACTATATCCTGCTGGGTGCAGTGCCTCATGCCTGCAATCCCAGCATTTTGGG}$ AAATAAAAAATTAGCTGGGCGTGGTGGCAGCCACCTGTAGTCCCAGCTACTCAGGAGNACTGAGGCAGGAGAATCGCTTG

AATAAGTAAATAAAATAAAATAAAAATAAAAATATGTCCTGTAATGAAATTGAAAGAGAACACTTTGTTTCTTATCTAG TTGGAACAGTGGGGTGGGGACAGACAAGTGACTGACCACTCTCCATCTGACTCAGTGTCAGTAGACTCTCTCAAAAATT AGAAGCTGGCTGACATAGTGGCTCACACCTGTAATCCCAGCACTTCAGGAGGCTGACGTGGGAGGATTGCTTGAGCCTAG 5 GAGTTCAAGATCAGCCTGGGTAACATAGGGAAACCCTTCTACTACAAGACATAGAAGAAAATTAGTTGGCCATGGTGGCA CACACCTATAGTCCCAGCTACTAAGGAGGCTGAGGCGGTAGGATCGCTTGATCCCGGGAGGTGGAGCTGCAGTGAGCTG TTTTGAAGACACAAATTCAGATGCATGTGGATGGCCCAAAATACTTTGTTTACATGTACTCCAAATGTAACTCCTGGGG CACCCTTCCTTATTTTCTCTACGACACCAATGCCTTCATGGTCTTACATCTTGTCCTCTTAACCCTGACTTCTTAGCCC 10 TCATGAATGCTTTAGTGTGGCAGATGTTACTGTACATGGGCCCTCGTTTATTCAGCAAATATTCATGGAGCCCTTGTACC AAGCACGGTGCTGAGTGATGCTGTGAGGGTGAGCAAAAGAGAATTGTCTGTTTAAATCCCAGAGGTCCGTCTGTGACA AAACTTTCACCATTCTTTTGTAAAAATTAGAAAAATACAAAATAGTGAGTTTTTCATGAGCTACGTTGTATCAATTTTAA AGTATTTCTTTTAGGATTCTATTATTTACCCTTTTTCTTCAATGTTAAATACCATTTCCTTTAATAAAGATTTAAAAAAG 15 CTCCCTCCCTGTCTTCTTCCCTCCCTCCTTCTTTCCTTCCTTTCTTTCCTTCCTCCCTCCCTCACTCCCTC CTAGGAATGCCTGATGTATCCTGTGAGTTTGCCACTTCATGATATTTGATATGTCATTGTTTCCCCATAATTTT 20 TCCCTTGGCCCTIGTCAAAAGGGTAGCCAGTTTTCTGTTACCATTGTGCTAACTGAAGAATGGGAAAATATGCCCAGAGTT CTCAGCTATCCAGAATTACAACTCCGCCTCTCGTGCTTGGAGGCATAGTTCTTTGTCATATTCCTGAGTGTCTTACAGATG 25 ATGAAAATAGCCAGTTATCTTTGCCCTTCATGGAAAGGATAGGAAGCACTCTGATGAAGCAATGTTGGGGCACTCATGG ATTAATATGCAAGTTCAAATACCTCTTGCATGGAGCAAGAAGCTGAAACATGCGCATTTGTAATAGACTCAGCATCTGAA TTGAATGGGCAGCTTTGGCTGGAGTAGTACTGCAGCTTCTCGAATGCCTATTGTCAAAATATATACTAGTTAGGAGACAC ATTCTGCTACGAGGGATGCCCTCCCAAATTAAAGACACTGTTCAGTTTACGCTTAACATTTATGGCTATCAAACTACTAG 30 TAAAAACACATACTTCTTTTCAACAAAAACTGGCTCTCTTTGTAGTCTCTTTTTTAATTTGGTGCAATCACTTAAAAAGT TTAGCACATTTAAAATTTTACATCATTTTAAAATTGTTTCTCTTTTTATAAGAAGGATGCTATTTACTATTAATGTAGAAG TACAAAGGAAACGGTTACTTTGGATTTATTCTTTTGGAAAATTAGAATGTGGGCTACATGCTTTTCAGAAGTTGATGACC AAGAGAAGAAAGAAAAAAAAAAAAGGGTGCTTGATGCCCTGCTCCTGCTATGTCGGGGAATTTCTTGTACCCTTCATA 35 TGAGCCCCTCTGAACAAAAGCAAATCCTGTTGACCTGTCAGCTTAAAAAGACAAGAAATATGCCACATTCCGCAGGAATA TTCAGAAAGCCACAGGCTGTTCTGAAAACAGGCAAAAATCAATAGCCCACTTGTTGAGGATAAGTGAATTAGCCTGTGTT GAATGTAACTGAGTACCTGAACACTTGAGTGGGCAGGGATTGTTGGGGGAGAAAAGACAATTGTCTTTTATGTCCACAGCG 40 GTTCACATCGCTGATTAATTATGTCCAATGATCATTTTTGTGCAGGACTAATGGGCAGACTCTGTTTTTGTTTTTGTCTG TCTGCCCCACAACCTGGTGAACTGAATAGAGTTCCCCACTTCTCAGAACAATGCAAATGGTGGCCAAGGGGCTGTGGAAG TTTTCAAATACAATATTTAATAAACTATTAAAAATATATACAAAATAGTTGTAAGAATCGGGGCTCCTGTGAGTACGT 45 TCAGCTTATCTTTGCATATTTTGTCCAATGATAATTAAGCACAAATTGTTTCAAAAATCTTTCAAAAATTGTTATAAAG ATTITTATTGGTGCTAAGGGCTGTAATTTAGCAAAGTCTTACACCTGAAACCAAGGGTCTTAGAGTGTGAACTGT TGTCTTAGACCCGGAGAAGTCTCCAAAGAATGACCATCCGAGGCATTCAGCTGGCGTAAGAGGGGTGACTCATTTGTTCT TCTTTTTTTTTTTTTTTCGCTGTCTACAGAGAAGGAGGATATAGGGGCCCCTTAAGAGAAAAACTGGAGTAGGGTGTGT 50 GTGTGTTTTGGTCAAGGGCAGAGTGTGCTGTTGCAGGGTGTTTCATTTTCATATTTTGTCATTTTCTCTTTTGG TAAAATCTATCAAAGTATAATTAAATACCTACAAAACATAATATTATGTCACTAGTCAACCGCAACACAAATCTTATATC ATTAGATTTCAGTGATATTGAATGTGGGAGATGGAACCATTTTAGTGCATTTGATATGATGTGATGTGGCTTTCTCCAAG 55 CCTGAGAGTGCCTGAAACCCAGAGAGGTCGTACGTTGACCATGCCACGGGCCCTTCCTGGTAAATCTAAGCAGAAATAC ACCATGCATGAGACAAAGAACAAGAAAGAACTGTGAAAATACACTCAGGACCAGGATGCTGATACAGTCATGAGGTTCAG AACCAGATTGCAAGTCTGTTTGAATCCCCCAAATGCCTGTGCTACATAACTGTCTCCTTTACTCTGTGCTCTTTGCCCCAGG CAGAGTGGAAGTTGCCTTATAAAGCTGCGACTTGCCCACAGTGTTTTCCCTTTCAGCAGGGAAACCGGAGTTCTCCGTGC 60 TGTTGGGAGGTTCAAGAGCCACTCTGTGCAGAAATGCCCAGAAAGAGTTAAGTGAGGTAAGTTCGTCAGACTTCTGCAGA CCCATACTGTGGAAGGGTCAAGTGCAGGGTCACCAACCCGTTCCATCTTCCTGTCAGTTGGCGTCCACCCTTGGTTTCAA AGGGAACAGGCATTACTGACATGACGGGACCTTTTACAGTTCCCAGCTGCTCATTTGGAGTACTGCGGACCCAGGACAACT AAATGACAAAGGGTCAGGTCGTCTTAAATTCCAAATCTGGGCACATGAATCGTCTGACCTCGGAAACTTACTATATGCTC 65 GAAACGATTTAACTAGCAGCAATAAAATCTCTACTCTTTTTTATGACAAATAATCTAGCATGTCTGGGGAGCATATTTGAT TCTTCATATTTGGGACCCTTTTTTAAAGGCTGAGTTTTATTAAAAATGATAGAAAAATTAGTTATTAAACAGTATGTCAAA TACCTTTCTGTCCCACCAGATTTATTTTTAAAGACAAACATTACAGAGGGGCAGGGGAAGGTTATATTTGAAATCTTTCT 

AACCCAGGAGGAGGAGGTTGCAGTGAACTAAGATTGTGCCACTGCACTCCAACCTGGGCAACAGAGTGAGACACTCTCAA

GGAGAGTGGAAGAATCTTGCTTTTAAAGCGATAGTCCTATTTTCTAAGTAAAAGTCCAGGCATGTGACTTAAAAAAAGAAA TCACTCTTAAAATGCAGCCTGTCTTTGGACATCTACTCCAAGTTTGCATTCTGCCTTGCCTTGTCAGTCTGGGCTATCAA AAATATAGTTTCGTTTGGAAAACAAAGGGGTGAGGTGGGTCCAAAGTACAGGAAGCTATACCATGCAAATGAAAATATTT TTTCCAAAGCCATCTGCTAATCCCTGTGATTTAAAAATGTGCGTGTTTTTAGTTTCTGTCTAATTTCAACCTTTTCTTGC TTTAGTGATTAATTACCAGGTTTCTCTATTAAGAGCTTGTGCGTGTGTAGGGGGGTAGCATAGAATAAACAGGCTCAGAGC 10 TGTCCGATTGCTATCTCGCTGGAAAGACTGCTGCTTCAGCAAGGTTTCTTTGCTGGTCTGTGGCAAGGTCCCTGCTTCAT TTTCAAGGTGTCCTCACTTGGTGCCTTTGAAGGGTTTTTAATGGATTCGCTTGATATACCTTCCAAATGGAGTACTTTGT GCGTTAATTCAGTTTGTGATAAAGATCCCTTTTACCCTCCTTTTCATAATTCTTCCCAGAGATATGAAGTACACTAGAAG GTTAGATGTGGCATTTAATTTTTCCACAAAACCTATCCATAGAGGGGGAAAAAAAGATTCAATTTCATTACTATTCATGT GTAAGAATATTGAAGGTGGTATACTAAAGGAGATAACTATTTCTTCTTCTATCAAAGGAAGAACAAATCTGTCTTTGAAC 15 GAGGAGCTCAATTCTTATTTAAAAGATAAAAGGTCACCTACAATACTCATTCCTTTAAAGCTATAGTGTTGGGGTGGGAA GGAAGCTGTCTTACCTGGACATATTAATTTTAAATTTTGCTTGAAAAAATTGCTCAGTGCATTTATTGACTAGTCTCTCT GTGTGAGTTCTGAAAGTCTGTTTATATCTGTTGCCCCTTCTCCTAAAGTGAACCCAGATATGTGGGTATGGGTGCTAGT TTTTATATTAGGTCTGAGATGTGGAAAACAGAAATCTAACTTAGGGATGTATCATAATCAAACCGTCGGGGCTAATGGCA TGGCTCTGATATTATAAAATCTGGAGGTTTGGAATGCAGCAAACTCTGGGGGCATTATCATTATTATTAATAGTTTG 20 TATTTACAAATGTGGCATTAAGTAGAACAACGTATTCTTGCAATTAATGACAGGAAGCCTACAATTTCTCATTAAGCACA CAAGTAGGAAGCAGGCAGAGTTGCAATATGAAGAACAATTTCAATCATATGTTGTTTAATTGAGTTTAACAAGTAAATGT ATATCCCAGTGTGTGTGCCCAAAGCATAATGACAAGTTGTTCATCATTTAATTAGAGATTTGCTTATTGAAACGACT GAAATAGGTAGTTGAAATTTTTGCCCTTGGACAAGGGAGTAATTTGTGATTTGCTACGTTCATTTCGTGAGACTTTTGGTG 25 AAAGACATCTCCTTCTCATATGTTTAGGCAAGCGTTGATGACATCAACCTAGCCTTTTATTTTAAATCCCCTGTCAACGC AATTAGATAATACAAAAATAACAAAACTATAGGAGGTTGAGGATGGGGCTGGGGGCCCAAGGAGATTACTTGGTTTGAAAT GAATAAATTGTCTATCGTAAGGGAATTCTTTGGTGCATTTTATTGTGTGAAATGAGCCTGGTCATATGACTGCCCTGCCT  $\tt CCCTGGAGGCCTCCCTCCTCCTTCCCACAGACACTTATGGGAGGTACTGGCCAACTCTGTATGGCCAGTACTGCC$ CTAAGCAAGACCAAGAAGCTTAGTCTCAATTTCAGAGAGTTATTTTGGCAACATATTTGGGAAAATGATAGTTAGATGCT 30 TCACTTATGGTGCATGTCGCTGGTTGGCTGCTGCTCTGATCTCACTCCAGTATCAGCTTCAGTCAAGGAACGTATTG TTGTCAAGGAAAGGAAAAAGAACAGTGGTGAGACCAAAGGATCTTAAAGTTTCTACTTTGGAAGGGGCGTGGCATTGCTT CTCTCATTCCATTGGCTGAAGCAAATCATGTATACAAGCCAGAAGCCAATGAGCTATAGGAAGGGTAGCAAAGAACAGAA 35 TTGGATCCTGGTGTGCACCTGGCATATCCTTTAGGATTCTTTAGTGTTGGTAGATTGAGATGGAAATGAGGAAACTTGTA TTACCTACTCCTTTGGGCCAGAATTTGCTTACAGCACAGTGAGGAGGTATTCTTTGGAGAGCACTGTTTCCCAAGAGTGA TTCTAACAAAGAGGTGTAAATGGACAAGAATGAAAAGCAATTGCAAGGGCCTTTGAAGGTTTGTGAAGGATGGCAAAGTG ACTTGGATGTTGATTTCTAAAGGAGGTGAAACTTGAAGGTAGACAAGCTCTTTGTGTCCATACATTTGATGGGTCATCCT 40  ${\tt GCAGGTGCGGTGGCTCTTGGCACATGATGTAGGTTTTTGTTTTTGTTTTGTAGACAGAGCTCAATCTTTTGCCT}$ AGGCCATAGTGCAGTGTACAATCAGATTTCATTGCAGCCTGGAACTCATGGGCTCAAGCATTCCTCCCACATCAGCCTGC  ${\tt CAAGTAGGACTACAGTTGTGCACTACCACCTGGCTATTTTTAATTTTAGTTTCTGTAGAGACAGAGACTTGCTGTTTTTAATTTTAGTTTCTGTAGAGACAGAGACTTGCTGTTTTTAATTTTAGTTTCTGTAGAGACAGAGACTTGCTGTGTTTTTAATTTTAGTTTCTGTAGAGACAGAGACTTGCTGTGTTTTTAATTTTAGTTTCTGTAGAGACAGAGACTTGCTGTGTTTTTTAATTTTAGTTTTAGTTTCTGTAGAGACAGAGACTTGCTGTGTTTTTTAATTTTAGTTTCTGTAGAGACAGAGACTTGCTGTGTTTTTTAATTTTAGTTTCTGTAGAGACAGAGACTTGCTGTGTTTTTTAATTTTTAGTTTTCTGTAGAGACAGAGACTTGCTGTGTTTTTTAATTTTTAGTTTTCTGTAGAGACAGAGACTTGCTGTGTTTTTTAATTTTTAGTTTTTAGTTTTTAGAGAGACAGAGACTTGCTGTGTTTTTTAATTTTTAGTTTTTAGAGAGACAGAGACTTGCTGTGTTTTTTAGATTTTTAGTTTTTAGAGAGACAGAGACAGAGACTTGCTGTGTTTTTTAGATTTTTAGATTTTTAGATTTTTAGAGAGACAGAGAGACAGAGAGACTTGCTGTTTTTTAGATTTTTAGATTTTTAGATTTTTAGATTTTTAGAGAGACAGAGAGACTTGCTGTGTTTTTTAGATTTTAGATTTTTAGATTTTTAGATTTAGATTTAGATTTAGATTTAGATTTAGATTTAGATTTAGATTTAGATTTAGATTTAGATTTAGATTTAGAT$ AGCCACCCCACCCAGCCCATGTTAATTTTTTCACCTACAAAATGAAGGCTACAATATTTACTTTGCAGGATTGCTGTAAG 45 GATTAGAACCACCGTCTCTAAGGCATTCAGCATAGTCCCCTTAGGGTAAAATGAGTGCTCAAGAAATAGTAAATTTTAATA TGTGTCTCATTTTTTTCCAGATGCTCTGGGGTCACTACCAACCTTGCCTTTCACCCTACCTGGGATCTATGACCCTGTC CTTCTCAGAACACCACTCAGTACTTCTGGGTTCCCCAAGAGGTGCCTCTTGAGAGTTTGTAGGAAACTGTGCTTTAGTAA  $\tt CCTCCATGCCTTTTGATGCTGGTGCCCATCACCCCGATCACATGAACGTCTATGCCCAGGTCCCATTTCCTGACATTCCCCAGGTCCCATTTCCTGACATTCCCCAGGTCCCAGGTCCCATTTCCTGACATTCCCCAGGTCCCCAGGTCCCCAGGTCCCCAGGTCCCAGGTCCCAGGTCCCCAGGTCCCCAGGTCCCCAGGTCCCCAGGTCCCAGGTCCCCAGGTCCCCAGGTCCCCAGGTCCCCAGGTCCCCAGGTCCCCAGGTCCCCAGGTCCCAGGTCCCCAGGTCCCCAGGTCCCCAGGTCCCCAGGTCCCCAGGTCCCCAGGTCCCCAGGTCCCAGGTCCCCCAGGTCCCCAGGTCCCCAGGTCCCAGGTCCCCAGGTCCCCAGGTCCAGGTCCCCAGGTCAGGT$ 50 AACATCTCTACCTTCTCCGGGCCTAGGGCAGGGATCACTGTTTCAGAAACATGAGCGTATGGAAGCCCCAGTGTGTTCCT TGAAGTCCCGATGCGTGATTTGTCCCCATGCTGTGTCGCACTTGGTCATCTGGACCCTGGGGTTGCCTGAGTGTCCCTGT ACCCATAGTGGGTGTTCTCCACTGGTTCAACACACCTGAATTCCGGATTCAAGATGCAATCACCACTACTGTTGTTGTGT 55 CGAACTTTCCAGCCGAGAATGCTTTCCAAAATGGGAACAAGATCCCAACCCCTTATCAGAAACTTTGGGGGCCGGATGTG TTTCAGAATTCAGAAGTTTTCAAATTTTAAGAAGAGAATACACTGCGTATTCTGTGTATTACAGGGGTCAGCAAATTCAC AGCCCATAGGCCAAATCTGGCCTGTTTTTGTAAATAAAGTTTTATTGCTATACAGCTGTACCTGTTGGTTTACGTACTGC GATGGCTGCTTTCAGCTACGTTGGCAGAGCTCAGTAGTCATGACAGTAACCATATGCCCACAAAGCCTAAAATATTTACT 60 ATCTGGCTCTTTGCAGAAAATGCGCTGAACCTTGCGTGTTGTGTCACCCCTGGAGGTAGCACCTTGTAATTAAGCACATG CAAATGGTTATTGAAAGAACTATCTGTGTTGACAGCCTTTTGGGTTTCATACAGTCCTTTCCAGCTTGGGCAGTATAGAT CATGCTTATCATATCTTCAATGCATCATTTATTCTGAGTCCACATTGCTGCCTTTGAGCCGGGGCCCTGAGGTATCTCCT 65 TCACTTCTGAAGCTGACCTTGGGGAGCAGATTGAACACCTGTTGATGCCATTCTCTTAATTTCAGGGGAATGTGTGGGTC TTGATACTAACGCTACATGAAGAGGGACGGGGCCAACAGCAGCTCTTCCTTGACGTGTTTTATGTACACTCCAGAAATA 

TTTTCCATAGCTCTTTGTGATGCTTGATCAGTTGATCAGTTTAATCAGTTTAATCACGTTTTGCTCTGGGCTGTGTTATATA CAGCTCCCTCCCTAATCTTGCTAGAAGGTAGGGCTAATGCATTGTCAATTCAGAAATAGGGGGTGTTCCTGAGTCTGGGG ACACTCTAGTGAAATTCTATGTGTAAAATAATTTGTACAAGTTTATATTTTTAGCTAAATTAAAATACTCACATTCCCAT TATTTTTTAGAGGTTGTAAGCTAAGTAATAACATTCTAGAAACTCTCTGTTTTTTGAAAGGGCCATCACCACTGTTGAAGG CGCTAATGGGAGATCCTAAGTITICAGGCTCTGCTACAGACGTCAGGTCCCCTAGGAGTTGGGCTGCCTTTGCTCTCT CCCCGACTCGGTACCTGGTGTATAGTTGGCTAAAAAGAAGTTGTTGGGGCTGGGTGCAGCACCTCACACCTGTAATTTCA ACACGTAGGGAGGCTGAGGCAGGAGCATCTCCTGAAGCCCAGAATTCAAGACCAGGCTGGGCAGCATAGCACTACCCATC TCTACTATAAATTTAAAAATTAACTGGGTGTGGTGGTGCACATCTCTAGTCTCAGCTGCTTGGGACTACTAGAAAGGTAA 10. GCAAGAGAATCCCCTGAGCCCAGGAGTTGGAGGTTGCTGCAGCTATGTTCGCACCACTGTATTCCAGTCTGGGCAACAG GAGTGCAGTGGCACAGTCTCGGCTCACTGTAAGCTCCGCCTCCCGAGTTCACGCCATTCTCCTGCCTCAGCCTCCCGAGT 15 CAGGATGGTCTCGATCTCCTGACCTCGTGATCTGCCTTGGCCTCCCAAAGTGCTGGGATTACAGGCGTGAACTACT GTCTTTGGCCTGGAAAGGGTATTGGTAGCAATTGTCTTCGGCTTTCCCTGCCATGTGTATGCATTCCCACGGCCACACAA GCACACACACACTTTTGTGGTTTTTTTTTAATTATAAGCAAGTAGGATGTTTGTCTTAGTTTTTTTGGCCTGCTATA ACAAAATGCCATGGACTGAATAATATATAAACAACGGAAATGTTATTTCTCACAATTCCGGAGGCTGAGAAGTCCAAGAGG 20 AAGCACTGCAGATTCAGTGTCTGGTGAGGATTTGTTTTTGATCTCATAGGTGTCCATCTTTCTCAACTAGC AGAGGCAACTCTCTGGGGTATCTTTTAAAAGGGCACTAATGGCCAGGAGTGGTGGCTCACACCTGTAATCCCAGCACTTT GGGGGCCGAGGCAGGTGTCTCGGTGGATCACTTGAGGTCAGGAGGTCGAGACCAGCCTGGCTGACATGGTGAAACCCTG TCTCTACTAAAAACTAAAAACTTAGCCAGGCTCGGTGGCTTGTGTTAATCCCAGCCACTTGGAAGGGTGAGGCAGAAT 25 ACCTCCCAAAGTCCGCACTTCCTAATGTTACCACTCTGGAGGTTAGAATTTCAACATATAAATTTTGGGGGGACACACTTC AGACCACAATAATGTTTTATAATGTTCATTTTXCTTTAACAAGAGACACATGTCAGATAGTAGACATGATCTGAGAAGAC ACAAAACCCAGCGTGGTGATTTTGGCAGCCTTGCCATGCATCTCTAACATGCACATGGCCAGAAAAATAGCTTGGACATT  $\tt CTGTTCAACCCTCCACATGAACTGGTCAGTTTAGTCTTTAGAAGGTGATAGGCCTGTTGTCGTGGCTCACGCCTGTAATC$ 30 CCAGCACTITGGGAGGCTGAGGCAGGTCACTTGAGCCCCGGAGTTGAAGACCAGCCTGGGCAACACGGTGAAACTA AGAATAGAAAATATTAGGTGGCGTGGTGGCGTGCACCTGTGGCCTCAGCTTAGGAGGCTGAGGTGGAAGGATCACT TGAGCCCAGGAGGCAGAGGTTGCAGTGAGCCGACATTGCACCACTGCACCCCAGCCTGGGCCACACAGAGAAACCTTGTA TCCAAAAAAAAAAAAAAAAGTGACCACACTGTGGCTTTGCTGCTTTGCCTAAGTATTTCGTGAAATTGATCGTTCATTC ACAATGCTCAGTGCAGTGACTTTGCCGAGCACAAGTGGTGGACTTAAGAAGCCACATAAAGAAGCACCCACGTCTTTCTC 35 TGAGGACGTGCTTGTGTGTTCTGAGGAAAGCAGGTGATGATCCCTGAGGTGTATCCCCCAATCCCAAACTAGAAGTGA GTCCCCTGCTCCTCAAGCTTGCATGGCGCTCAGGTATTCCAGTGGGCCCCGCTGCATTCTTCCCAGTCCCAGGAAATCT TTGTGCATGCCTTTTCTGTGCCATCTTGGGCATCTCACGCATTGGCCCTATCCACATGTTGCCTCCAGCATCCCAG GAACTCCGTTAATGTTTATTTGAATGAATGAATGAAGGTGTCTTGCTATATTTTTGACATTTTCTGTCAAAATATGAATCTA TCTTTGCCTAGCATCTTTTCATGTGCACATTGCCCATCTTTATAACAAAGTGTGAGTGGGAAAGGACTTTTAATCTTCAT 40 TATATTATCATTCATATGAATAATGITAACAATTAGTGTTTATTGAGCACCTGCTATGAGCCAGATGTAGTGTTCAGTGC AGGCTTGGAGGCAGGAAATGACTCACTGAAGGCCACAGCACAAAGTGGGGACTTGAGTCCCGATCTCACTGATTCTAAAG TCCTTGCTCCAACCTCTGTCCATCTGAAATGGAAAAGCACTGACGCAGTTCTCACTCTGGAGCTTGTTTTATTTTGCT TGGCTGCTGTAGAAATACCACAGGTCAGGTCGCTTAAACAACAGGAATGTAGTTCCTCACAGTTCTGGAGGTTGGGAGT 45 ACATGGTCTTCCCTCTGTGCGTTTGCATCCTTATGGCCTCTTCTTGTGAGGGCACTGGTCATATTGGATTAGGGTCCA CCATATAATGACTITATT¶TACCTGAACTGTCTCTTAAAAGGCTCTGTCTCCAAACACAGTCACATTGTGAGGTACTGGG GGTTTGGGCTTCCACATACAAAGTCTGGGACACAGTACGCTCTCATAAGAGACCTCTTCTCAACAGGATCCATGTTTTGAT CCGGGGGAATAAAGCTAGAGTTGCTTTAATCCTTGTAATATGTATAATGACTCATGAGAGAATTCTCCACTGTCTTCCCC 50 CCCAGCTGACAGGCTATACGCGGACACCTTGGATGTGCCCAGCATGGATCTTCTCCAAGTAGGAGGCCTTGGAGTCAGAG AAAGGTGCAACTCCCACTGCTGCAGGAACAAGACTTTAAGATACTGAAATTTCTGGGCAAAGTTTCCTCAACTCTF CATTTAAGTGTTAGGCCAGGTGGGTGGCTCATGTCTGTAATTCCAGCACTTTGGGAGGCTGAGGTGGGAGGATCACTGG 55 GTCCCAGCTACTTGGGAGGCTGAGACATGAGAATCGCTTGAACCTGGGAGTCGGAGGTTGCAGTAAGCTGAGATCGCCAC AATAATTACAGGACCCTGCCAACCTCCTCTATCCCCTTTCAGCTCCTGCTGATGCCACTTCTAATCTCAATTTTATT 60 ATACAATTTGTTAAATACAGAAGTAAATGGAGGCAATAGTGATAGTAAAAAGAACCATGTGAACTGGGCGTGGTGGCTCA TGTCTGTAAAGCCAGCACTTCGGGAGTCCAAGGTAGGAGGGTCACTTGAGCCCAGCAATTGGAGACCAGCCTGGGCAACA AGGAGGCTGAGGCAGGAGAATCACTTGAGCAAAGGAGGTTGAACCATGATTGCACCGTTGTACTCCATCTAGCCTGGGCG 65 CTGAGTTCCTGTAGCATGTGCACTACTCCTGATTAACCAAGTGAAAGAGAAAATGAGACTAATCTCTAACCTCAGCTTCC TTTTCTGCCAAATGGAAGATCATCTCTAATTAATGAGTTAGAATACCTAGGACAGTATTTGGCACAGTTGATGAG GATGTGTACCTAGTAGCTAATGGTGAGTAGGATGAATAATAATACTATACCTTTTGGTTTCTGAAATGAGAATCTAAG 

CTTGTTACATAGGTATACATGTGCCATGGTGGTTTGCTGCAGCCATCAAGCCATCTTTTAAATCCATTCTTAGATTTTCC

GGTTTGACAAGTTTCCTCCAACAGACTCGTGTAGAAGTTTCTGTATCAACTGGAAAAAACCATGGTGCTTGGGACATTCA AGGCCGAAACTTGGTCCCTGGATGGGAGAAGATAGCTGTATCATTGGCAGAGGTGCCTTGGTCATGTACCCTCTCCAGAC TAGACACTAGATAGTGGGTAGGGTGGGACAGTTTTATGTCCTCTGCCACCTTATTCTGGGACTCTTGGTCCCCTGAGAAG TTTGAAAATTTGGCACATTTTAGTATTTGGTCAGTGTACTTCCTGCTTCTTGATGCACTGTTACTGCACAAGAATTGATT TYCAGGAAATATGGTTTTTTTTTCCTTTTTGCACAGCGATGGGTTAGCAAAATGCATATTTGCATAGAAATAATCTTTA 5 GTGAGCTCTGCTGGCAAGTGTGTCAAATTTATAAATATCACTACTATAAAGACATACTTTTGGATATGGATTTCTTCCTC AGTTTATTTCTTCTTTGATTTTTTCATGTCCAGGTCACTACGTATTTGCGTATATTTTGGAATTTTATTTTTTGAGCAA TTCATTTACCCAGATTGTGTTTCTGGAGATTAAAGCATCTCACTGTATTTTATTTTTTTCTACATTGCAATTTCAAAAT 10 CTGCTGCCACCTTGGTCCACAATTTATCTTTGAAAATGCTGGGTTTTAATGGGCAGGGTATAGTGCAGAAACCAGATGGT TTTAACTCACACCTGTGAAAATGCTGGGGATCTGCGAAACATTAAAGTTAATGGCCAGAATAAGGCTGCCAAGCTCGGTG TAACCCCCTACTCACCCACCCAGTTCCTCCTAGTGGGMAGTTTGCTGCTGTCTTACCTCCTCATCCTCACCCCT 15 TCTACTTAGATACACATTTCCATTTTACTTCTATTTGGTAGTCTCAGAACTTGGCTTTTATTGGCCAGTATATTCAATGA AGAGTCTTGCTCTGTTGTCTAGGCTGGAGTGCAGTGGCACCATCTCGGCTCACCACGAGCTCTGCGTCGTGGGTTCATGC GTAAAGATGGGGTTTCACCATGTTAGCCAGGATGGTCTCGATCTCCTGACCTCATGATCTGCCTACCTTAGCCTCCCAAA 20 GTGCTGGGATTACAGGCGTGAGCCACCGTGCCCAGCCTTCTTGTTTTAATCTTTTAGACAACTGGACACAGGTTTGTCTT TGGCTACCCAGTTGTTAGCTGCAGGTTTAACTGTGCATTCTAAGCACACCAGTATTTTATTACATCATACCTGGGCAG CAGATAGTTTTAGTAAAACCTTGAAAAGATATGACTATTGGGAAGAAATTTGGGATTCTATCCTTTTTCTCTCCATTCTT 25 AGCCTGGCCAACATGGTAAAACCCCCACCTCTACTAAAAATACAAAATTAGTCAGGCGTGGTAGTGTACACCCATAATCCC AGGTACACAGGAGGCTGAGACATAAGAATCGCTTGAACCCAGGAGACGGGGGTTGCAGGAGGCTGAGATCGTGCCACTGT CAGACGGACCCTAAGACGGCCCCAGTGATACCCCACCTCCTGGTGTCCAAGGCCTGATGTGATCACCCTTCCCCCACCTT 30 GAATGTAGGTGGGACATGGGACTTACTTCTGACCAATAGAATATGAAAAAGATAATAGGATGTAACTGTTAGATTCGGT TACACTATATGGCAAAGCAAAGGGATTTTGGAAATACCATTAAGGTCTTACATGAGACAGATTTTGAGTTAATGAGCAGG TTGCTGGCTTTGAAAAAGTAAGCTGCCTTGCAGTAAGGAACTGCATTTGGCTTCTAGGAGCTGAGANGTGCCCTAAGGAA GCCAGCAAGAAAATGAGGACATTAGTCCTATAACCACAAGGAAATGAGTTCTTGCTAGCAACCTAAGGGAAGCTTGAAGG 35 TGATTGACCATCCCCAGTCAAGCCTCTGATGANGACCGCAGCCCCACTAGGCAACTAGATTTCAGCATGGTAAGANCCCT TTTAAGCTGTTAAGCTTTTGGTAATTTGTTAGATGCNCAACAGAAAATGTGTACANCCCTGGATAGTAGACAGAGACTGC  $\tt CTTATAAGAAACCTGTACTCTTTGGCCAGACATGGTGGCTCATGCCTGTCATTCCAGCACTTTGGGAGACCAAGGCGGGC$ 40 AGATCACCTGAGGTCATGAGTTNCGAGACCAGCCTGGGCAACATGCTGAAAACCCCATCTCTACTAAAAATACAAAAAATC AGCCAGGCATGGTGGCGCATGCTTGTAGTCCCAGCCGACTTGAGANGGCTGAGGGATGAGAATCACTTGAACCCGAGAGG CAGGGGTTACAGTGAGTGCGGTGGCAGCTGGGACATTAACCAAGTTGTGAAAGGAGCCATGATGTTATTAGCTGAGTTAT 45 ACACACTTCCACCTACAGAGTCACATATTGTATAGAATAAAATATCATCAGGAGCAGCTCATGTGACCAGAATGTGACAA AGTCTTTGCTCTACAGGTCAAGTTGGGACTTACTGAGGAGAAATGAGGGGACTTCAAAGTCCAGGTTGCACCATCCACTT TATAGATGAGGAAAGTAAGAACCCACAGCATCTTGCACGTAGAATTCAATATATGTCCTGCTTCTTGAATCACATTGACC TAACAGGTCATATGATTTCCATTTGTTTGCACAACAACTCAAGGGCAAAAGTGAAATTGGAATTTTTGCTTTTGAATTTC 50 TGGGTGCCCCAGCATTATGTGGTAAAGGACATGTATTTCCAACTGGCAGGGGCTCTGCAAAGTTTCTCTGCCTCCTTTGC TCACCAAACCCTAAATAATTGTCTGGATGTTCCTTPTATTGTCACCTCTGAAACAAGACGAAGATTTGGACGGTPTGCTT TAGAGTGCATTAACTTCTTTATCACATTAATACTGACTCATATCTTATTTCCCACTTGCAATAAGAAAACCATTCAAATC TTGCCCTCACAGGACAATATCTTTAATAGCTTCTGTGTGTTTCCTATTTTTGGCTGTTTCTGTATAAACAGACTAATCTA ATAGCATACTGAACCCATCTAACTTGGCAGAAATTCAGAAAATCACTCATTTCTATGGCAAGCTGAGATGCTGAGAAGGG 55 GGAAAAAACCCTCACTTTTATTGCAGCAAGATTTTTCTCAAAGTTGCCTTTCATGAACATAATATGTCTATCATTTGGAA TCTGGCTTGAATTTGTTTGCCTAAAGGAGCAGATATCGTATGAACATGATTTTGAATGCTGGCATGGTGATGAAAGGTGA TGTTCACCTGGAGTCTGTACACACAAAACCCTGTTCATTTTACCTAAAGGGTAAGAACATCATGGCCCCCTTCATATCCT GGTTAATGTCCCCGCTGACCCTGAGTTCTGCCTCCATCACTGGAACAAGAGCCTGTCTTTGGGAAGAGGTGTCTTCCCTG 60 GCACTCGTTTGATTTGTAGCCGCCACACATGGCAGGTCCCAAGCTGTCTGAAGTCTTGGCTGCCATTCCTAAGCTACTAA AACTTTGCTGGAGAACATCACCAATCACGCTGAGGGATCCTTTGACAACTCAGCTTCATGAGGACAGCTGCAGTTCTGCG CTCACTAAAGGGGAGGAATCCCTGGAGCCTCCCCATCCAAGGCCAGCGTGTTCCATTTGAGGGTAACTGGATCCCTGAAA TTCACCCCCACACAATCCACAACCTACTACTAGAATGCCATATGCTTTTCTATATGCTGTTGTTTAATTTCAGTTGGTAC 65 ATATTTTATTTTTTGAAACAGACTTCGTTAGAACATCTTTAGATTTAAAGAAAAATCAAGACTGTAGTACCAAGTTCCCA TGTGTGTAACAGCCAGTTTATCCTATTATTTTAACGTCTTATGTTATTTGGTACATTTATTAAAGATTAAATTATTGATA CTGGAAATATTAGGTTGTGCAAAAGCAATTGTGGTTTTTGCCATTAAAAGTAATAGTAATAATAATACTCGGTTGGTGCA GAAAAAAAAAAAAAAHRRMAAAAAYTGCCAAAAGTAATTGGCAAATGGCAATTGCGGTTTTTGCCGTTACTTAAAATT

GCATTACTTAAAAGTTTTTAAGTAATGCAATTACTTAAAACTTAAGTTTTAAGTTAAGTTAAGTAAAATTTGCATTACT TAAAAGTAATCGCAGTTTTTTGCCATTACTTAAAAGTAATGGCACCAACCTAATATTGTTATTACTTTTTTTACCAACCTAAT ATTGTTATTAACTAAAGTCCATCGTTTATCATATTGCCTTAGGTTTTTAAAAAATTTTTTTACCTAATGACTTTTTTGTGT 5 GGAGTGCAGTGGCGCGATCTTGGCTCACTGCAACCTCCGCCTCGCAGGTTTAAGTGATTCTCCTGCCTCAGCCTCCTGAG TTAGCATÇTTCTTGGCTGTGACAGTTTCTCAGAAATTGTCTTTGTGATGACCTGTGACAGCTTTGAGGAGTGCTGGTTGGG TATTCTGTAGGATGCCCCTGTGTTGGGATTTTTATGATGTTTTTCTCATGAGTTTACTGGAGTTAATGAATTTCAGGGAG GAAGACCCCAGAGGTCTGTTTTCATCACATCGTATCAAGCATTCCACCTTCATCATGACTCTTCACTGTTGATGGTGACT 10 CTGATTCACCTGGTCAAGGTAGTGTTCGTTAGGTTTCTCCACTGCACACTTAGTCTTTCCCTCTACTTTCCACACTGCTG CCTTTGGAGGAGTGTTGCTGTGCCCAGCTCACGCTTGTGGAGTGGGGATTTAATGTTCTCACTCTTCGAGGGTAGAGTAT CCAGATGGAACAATTTGGTCTTCAAAAGTTGCTGCTGTTGGCTCCTGTGTTCTTGTGATGTACACACATCATGGTGTGGT 15 GTGTTTTAATCTTTGGTTTTGTTATCACTTCTTTTATGCTTTATGGGCCTTCTCTTCCCTCTTCCCCCCACCTNCATANC CATACTAGAGCAGTAGGCAGTGGGTGAGTTCTCCCACTTTACATTTTACATTTTACATTTAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCCCTTTCAGGCCCCCTTTCAGGCCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCCTTTCAGGCCCCCTTTCAGGCCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCCTTTCAGGCCCCCTTTCAGGCCCCCCTTTCAGGCCCCCTTTCAGGCCCCCCTTTCAGGCCCCCTTTCAGGCCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCCTTTCAGGCCCCCCTTTCAGGCCCCCCTTTCAGGCCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCCTTTCAGGCCCCTTTCAGGCCCCTTTCAGGCCACTCTTCCCCTGTGCCCCAGGTGTGTTTGCTACCATACCTCCCCAGGGGATAGCCCTCCAAACTTGATTGGCCACCTAG TCTGGTCTTAAAGTCCCAAAGGGAGGCCATCACAAACTACTCAGTATGGAGAAGACCTGAATCCTAATTTTGGCTTAACC 20  ${\tt CCAAACTIGGGGGATICAGTITITACCTGTGTCTCTCTATACCATAGTITATGACAAGGGGTTTTCTGTGGCTGGTCTCC}$ AAGCCTCTTCCAATCTTGACATTCTATGATCCTGTAAGTCTTTGAATAATGGCCCAGGATGCCAACAAGAAGTCACCAA TGAGAGTTCAGGTGTTCTGTTGGAAATCTTTGTAAAATCACAGAGAAAAGGAGAAAAAAGAATAAAGAGAAAAAACTG TGATCCAAATCCTGGGAAGACTCTGGAACAACATCGAGGCACCTATGTTAACTCTATTTCATTTTGGAAAAGTTGAGTAG 25 ACAAAAGGTGCAGAGTAGAGTATGCAGTGATTTCAGGGTGTTGGGCTCTGACAAAATAATGCCGACTTAGACAGTGTTAG TCAACATCAAATGTCTGGATCAAGAGAGAGCCAAGAATCCCGTGGATTGGCCGTTGGCCAGAACTTGTCTGGAATCTTGTTT TCTGCCTTGAGTGTCACCTGTTGAGAGCTCTGTTGACAAACTGGCATTTGTCCTTGGGAGAGTAGCCTCAGGACCAGGGG TGAAGAGTTCAGTAAACTGTGTTTAACCCAAGGAAAGATACAGGGTGTGTCAGATTTTGTAAGGATTTTCAAGGACCAGT AGATAGTGGCCCTACAGTGGAATGAACCTTCACACCGAGGATCTGCTTCCTTTGTTGGAGGTGGGAAAGCAAAAGCTGGA 30 TOCTTGGAATTGTCATGGCTGCCGTCTGAGTGATGNCTACCNTTGAGTGGACGGTTTNGGCCAACTAAGGANGTAAGGCC GCCTTCCAGCAGAATCCCCTTTGTTTGCTCTAAATATACATTCCCAAGCCCCGTGTGGCCATTCTGATTTACTAGGTCTG GGGTTGGGGGATTGTGGGNTGCCGAGAATCAGTATTTCTATCAAGCTCCCAAGGGGACCTGATATATACATGGAGCTGAA 35 AAGGATAATTACACAGAATAAGCACTGAGATGCCTGTTGATGGATTTATTCCAGCAATTTTNATTTTTTAGCTCTCTTT AATTCAGGGTTAATTTCTTGCTTTCAAATGAATTATGAAAGGAAGAGGAGAGCCTTTGGAAAAGTCTGAATGTTGATGC CGACGACTAGCCAGGCGCTTCCCTTCCAGCTGGTTTCGTGAGGGGATTAAGAGGCCACTGTTGTGAATCTCCCATTAGTGA TGGTCCCAGGCCCCTCCTCATTGTGCATTTATCTTACAAGANGGCATATTTAGGAGATGTTTCCGTTCTATTTTATCTG 40 CAGAATTACTTTCCATTCTCAGGTCTTTTATATAAGTATTCCCTTGAACCCGTTCCAAAAACTGGATTTTTAACCCAATA GACCATAACTGCAGTGTTTTATTGTGCTTACATATTTCAAAATGTGAATGTAAGTAGATTTAGCAAAGTTAAAATAAAAT GAAAACTITTCAAAGGGCACCACTGCTCGCATTCCCATGTTGGAGTITTCCCTTTGGGGTTCTTATGCCATTTTAAAGAC GAGGTTAGGNCCTTCCTTTGTCTCCCAGGAGCACACTTGATAGCAATGTAGGGTGAATTCCAAATCTGTGAGTTAGTGCC 45 ATATATAGCAGTGTTGTCAGTAAGATTTCTCACTNGGCATCTCTGCTTNNCCCCTCTTGACTNCTCTTGAAATCCCNTTC NTTCAGGCAGAAGTTGGNAGTCATTTCTNCTAAAANTAGAAATCTGATNCTTGCCACCACCCTACTTGCCNACTCCCTGC TTAATCCCTTCACTGCCTCACCATATCCCTTAGGATAAAATAACAAAATCCTTTCCAGGGCCTGCAAGACCCCTGCCAAC CTCTGCAGCTTACTTTGTACCACTTTCCCCAGAAACCTGCTACCTTACCTTGCCACAGGGCCTTTGCACAGGCT CTTGTCTCTGGCTAGAGTAGTCTTCCCATCCTGCTTTAGCTAATCAACTCTTTCTCATCATTTAGGCTTCAAATGGATCA 50 TCACTITCTCTGGGGTGCAGGGGTCTTTCATATAAGTATTTCTTTGAACTCATTCCAAAAAAGTGGATTTTTAGAAATAG AAAAAACTAATTTAGAAATAGAAAATTAATTGAGTTTTAGTTTTTAGAAAANTTATCTNAAGAAGTAGANTTTTTAGAAA TAGAAAANTTAACGTAGNATCACAGAAAATTATCCAAAGTCAGTTNAATTTTCCCTTTTCCAGCAACTGTATTTGTCCTC GCAGGGATTTTAGTCTATTTCATTGAAAATCTGTCACCAGTCACTGGCCCCAGAGAGTCCTCAAAAATAATTGTTGAAT 55 GAATGAATGAATGAATGATGATGATGATGATGATTGTGTATTCCTCATCTGGCTGTAAGTTTCACAAGGCCAGCAC TGGGGTCCTATTTTGCTCACTGTTGCTGTGGGAAAGAGTTAGTACAGCAGACTGTCGCAAGCTTGGCTCTTGGCTGCA ACCAAAAATAGGGCTCATGTGGAATACCTGCTTTCCTTTGTGGAGGCTGGAATTTTGTTATATGCTACAGAGAGGGTGCC 60 TTCACAGCTCATTTCTGGGGGACTAATTAAATGCATCCTGTGTGACCCCACTGGAAGAGGACATTTGGAATCTTGTACCT GGTTTNINCTCCAGACTTCGCCTCATTNCAGCATTTNCCCTGNTGCTCATTTTNGCCNTTGCATNCCTTTTGCTGTGATA AATCTCAGCCATGAGTGTGACCGTATGCTGAGTCTTATGAGTCTTCCTTGCAAACCAAACCTGGGTTGGCGTTTCAG GAAAGACGCCATACGCAGTCACCCCCCCCCTCTCTGGGTTCTACATATGTAGATTTAACTAATGACAGATTAAAAAGCATTC ACCACTATITATATCGTGTTTATATTGTATTAGGTATTATAAGTAATCTAGAGATGATTTAAAGTGTACAGGAGCGTCAC ATACATTATATGCAAATACTATACAATTTTATGTTAGGGACTTGAGCATTTGTGGATTTTGGTATTTGGGGGGGTTCCTT GAACCAGTCCCCTTTGGATACTGAGGGACAACTGTACAAATCACATTTAGGNAGTGGATGCAGGTCAGTCGTGACATCTC ATCCACCCTTCCTCACCCAAGATTCTCCGTGGCTTGTGTCAAGGCCTCACCACNATCAGAATATTTCTGCTCATGGTTG

 $\tt CTGAGACAGAGCTGGACAGGTCCAGCATCCATTCCCCAAAACAGAACTCAAACTGACGATCATCAAGATATTWCCAGCTA$ TGGCAAACTGCGGAAGAATTAGGACAGATGTATGACTTATTTCATATAAAGCTAAATCAGTTTAATTTATATGATTGTCC CTCTGTCACCCAGGGTCTAGCACAGTGGCACGATTTTGGCTCACTGCAGCTTCCTCCCAGGCTCAAGAGATATTCTT 5 GCCTCAGCCCTCCAAGTAGGGCTACACGTGTGCCACCGTGCCTGGCTATTTTTTTGTAGGGACAGGGTTTCAACATGTT GCCAAGGCTAGTCTCTAACTCCTGGGCTCAAGCAATCTGCTCACCTGGGTCTCCCAAAGTGTTGGGATTATAGGTGTGAA CCACCATACCCNAGCCAAAATATTCTTTTCAAAGTGNATAAGAAGTAGGAGAAGCTTGCTCTCTTTTTATTGGCACTTCT GTCTTACATGCACTPTTTGATTGAAATTATTCTGGCTTCTATGAAATGACNAGTGATTGGAGGTGGTTTATTPTTTTTTA 10 TCTTCTTGGTCCATGAAATCCAGAAACTGGAGACCAAACTAGCNAAATTCGCAAGGAGCNTGCTTGATAGAAAAACACNT TGAGATCAAGAGTCAGAAATAGCTGGGTTGAATTCCAGTTCTCATATTAAGTGACAAGTTGCAGAATGCCCCTGTCTT TCTGAGCTGTTTTTATATCTGTACAATGGGGTTAATACTACTAGTATTTGATTCCAGGGATTGTTTTTGGAGGGGAGTGAG GAATAAATGATATAATTCACTAAAACACGTAGAATAGTATTTGACACAGAGTAGGTCAGCATGACCCTAAAGTATCAGAN GTCATTATTGAGNNTTATTCCGCTACCTCCGTANTTTGAGTCCTTTCTTTTGGGCTTTCCTANCTTAACGTCGCAGATGT TATTTTTTGAAGAGGGTGTAGGCCAAGAAAGGGGTGGGAGAAACGAGCAAGGTGTTGATAGAACCCCTTAGTGTCCTCC15  ${\tt TTCTGTCTNCCCAGGCNTGGAGTGCAATGGNTGCGATCTCANGCTNCCCTGCAACCTNCTGCCTNCCCATATTCAAGGGA}$ TTNCTCCTGCCTNCAGCCTCTCGAATAGCTGGGATTACAGGTNGTGCGCCACCACGCCCNAGCTGATTTTGTATTTTTAG TAGAGTTGGGATTTCTCCATGTTGGTCAGACTGGTCTCGAACTCCTGACCTCAGGTGATCCACCCGCCTCAGCCTCCCAC 20 AGTGCTGGGGTTGCAGCTGTGAGCCACTGCGCCCGGCCTACTTGGCCAAATTCTTGCCTGATCGCCTCTCCACCCCTGCT ACGTGTAATAGAAAGGTAGGGCCATGTTGGAGAGGGATCCAACATTTATTATCCCCATTTTACAGATGAAGAAGTTAAGG TGAGAGCAATCTGGCCAACATGGTGAAACCCTGTCTCTACTACAAATAAAAAATTAGCCGGGTGTGGTGGCGTGTGCCTG TAATCCCAGTTACTCGGGAGGCTGAGGCAGGAGATCGCTTGAGCCTGGGAGGCAGAGGTTGCAGTGAGCTGAGATCGCG 25 GCAGAGCATAAGTATCTTCTATGGGGCTACCCAACTAGGTCGGGACAGGGCAGGGATTTGAACCTAGGAGCTCTTGGATT  ${\tt GCAATTTTCATTCACCCCTCCCCTCCCACCCTTCCTGTCTTCAAGCCTGAGCAGGTGATACTGCATTTTGTACCGTATGGTATGCAGGTGATACTGCATTTTGTACCGTATGGTAT$ ACTITAAAACAGAACCACGAGTICAGAACTITIGGITAGGTCCTGCCCGTGTTCTCTAGCTAACGCATGGCAACGCTGGTT  ${\tt TCCAACCTTTCACTGTGCGGGTTTCTGATGAGTACGCTGGCAGGGCCTCTGGCTTCAGAGGATGCCACTACAAAGGTCTCCT}$ 30  ${\tt CCTITICATAAACATTGCTGCAAGGCCCGCTTCTCAAGAAAGCAACTTGTGCTACCTCCTGCGTGCTTTTATGCTTCGCT}$ GCTCTGCTGACCAAAGGCTGAGTGTCCCTTTATTAGTCTGAGCCCCTAGAGAAACCAAAGAGGCAACCCTCGACCCAACT 35 GACAAGCCAGCTGTGGGGTTGAACCCTGTTATTCATACAGTAAGCACTCTTGAACCCAAAGAAGGTGCAGGTTGAAGATG CAGCTATATGACTCTGTACCAGAGAGAGCCTTTTTGTACATTTGGAATAAAATTTTTAGCATTAGAGATTCGCTTTTT  ${\tt AAGTATCTCATTATAAATGGATGCTGAAATGTCCAAGTGTGGAAATGATACGCTTCAGCTCTTATTTTTAAGTCATCCTT}$ ATCTCTTTCACTTATTCCCTCATTCAGGCACCAAAAATGCTGTTTGACTGGGAGAGCAAGTGGAGCTGTTCAAAGTTCTA GGGACNAGCCGGGCGCAGTGGCTCATGCCTGTAATCCCAGCACTTTGGGAGGGGGAGGCGGGCNAGATCACAAGGTCAG 40 NAGTTCGAGACCAGCCTGGCCAACATGGTGAAACCCCGTCTCTACTAAAAATACAAAAATTAGCTGGGCATGGTGGCGGG TGGATTCTGCCGATAAACATCATCTNGGACGGAATGAAGCTGAGGGCCAATAGTTTAGAGGCTCAGCNACCCGACTGGAG 45 TGGTGTTTAGGTGGGCTTGAGAAAAGTGCTGACTTTGTGAACGAGGAGGGGAAAGGGTCCAGAGCAGTAAAGAGCCTG TAAATAAATTCATACCNAACTTCAGCCCCATGCTTTCGTTTGGGATTCCTCATCCAACCCTNGACGGCTTCCCTGCGGGA CNATATTTCCCCCTCTTANCAGATAGGAAACCTTGCCCAATGTGATTACGCCAGGNAAGTCAGATTTCAAATCTAAATGT GCCTAATGCCAAAACTGTACCTCTTGCCACTCAACATCTGCAGTCAAAGGCTTCCTGACTCAGGATTTGCTGGGGTCTGG CTCTGGGCTATTAGAATTAGATGCGTGAGACCCTTTCAATCTAAACCTTAAGTATTTTGCCTGTTGGACAGATGCCTGGT 50 TGTCCCTTTAATCCATCGCCCAAAAAGCCTGAGGAAGGATGGCAGGTGGACTTGGATCTAGGCCACTCCCTTAGATCCTG ATTAGGGGACCTCTGCGACTGCTCATCTGGGAGGAACTAGGGGAGCGCTAATGTGTTGTCCTTGACTGGGCAAGAAGGGA TGGGGAAGGCAGACAAGTTGCTCATCCTCTCTGCGCCTCAGTTTCTTCATCTACAAAATGAAGATGTTGGTTATTTCTTT 55 ATTCAAGGGTTGTTGAAAGGATGAAGTGCTAAAAATGCTTGACCAGCATTCACACAGGCACTAAGACGGTGAGTACTCAC TACTTATCGCTGTCAACATCATCTCCGTCCACATCAATGTCGTCATCGTCCTTATGAAAAGCCCGGGGCATCATTTTGCC CTTGAGCTGGATGTCCATGTTGGAAAAACAGCTAGTGAAAGGCGTGCCCAAATCTTCAGAAGTTGGCGTTTCCTTGCAGA TATCAATTGGGGGCAATTGGAGGGGAAAAAGATGCTTTGGAAACCAGGACACAGAGAAAAGTGCCTCGTATTATACAGAG CCAAGAGAGGTCACTGTGGAAGTACAGAGGAAGCCTTGGCCTAATTGCACGGTTAATACAATTCCGTAACTCATCCTGCC 60 GTAGTGATTAAAATGCCTTTGACAGGCTCTTGCTATTAAGAGTTTCTGGCTCCAGTTTAATAAAAGGTAGTATATTATAA TGGAAACCAGGTTATTATTGATAAGGACTAGACATATTAGAGACCAGGTTAAAGCTTTGATAGTCCCAAATGCAAGGGGA CCACCTTTMGAATNAAACCAAGTTTGGCCTCTCTGATATATTAATATTATTTAATCATCAGACTTTCAGTGTTAAAGGAGA 65 TTACAGTAGAGGCATCCAGTTGATTGGGGAATAGTTNGTTGCAAATGATAAGCTCTTTTGAATAAACTGATACTGACTTA  $\textbf{ATMGAGGTTCTGCTGTGTACTAMTCTTTTTTTTCCTAATAGAAAATAGAGTAGCTGCCCTCCCCATCCGCCATTCTCAGT$ TCAAGTTTCTGGAATTCTAAGAGGGCCTGAAAGGTAAGTGCTCACTTACTGAGGTGTGTGAACAAAAANCAGGCAACCTN AGCTCAACAAGTAAGAATGGAGTGGCATNCTCCCCACCTGCTCTGGAGTCATGTTTTGCTTCTGGAAGGGAGGCAAGAG

GCATTCAACCTCCTGTTAATTTGGTTGCTCCCTTCAAATACGCTCTTCCAGGGACCAGCCCCTGACCTGCATCATTTAAA TGGACGCGTTCCCCTTGTCTGTGCAATTCCCAACAGAGGCAAGTGCGCATTTGAGACAGGTTGAGGGTTCAAGCTGTCCA CTGCATTTTCTAATCTTCACANNATAACTCTGTGTTGAGAAATATTCCTGTCTGTAATCCCGGCACTTTGGGAGGCTGAA 5 ATTATCTAAAAATACAAAAATTAGCTGGGCATGGTGGTGGGGGACCTATAATCCCAGCTACTTGGAGGCTGATGCAGCA GAGTCTGTTGAACCCAGGAGGCAGAGGTTGCAGTGAGCCAAGACAGTGCCACTGTGTTCCAGCCTGGGCAACAAGAGTGA AACTCTGTCTCAAAAAAAAAAAAAAATTGTTTCTGGCCCCACGTTACAGATGAGGCTTTTAAAGATACCCAGCCAATGGT 10 CCACAGTGATGTAACTCATCAGTGGTCCNACCTGACATTGGAAANTTCGGTNTGCTTTGGAACCNTTCTACTACANTCCCCTTTCCNTTACTCANCTGACNATCATTCCCNAGNATCAAAGAAAGATAAAAGAAGGAAGGCTGGAGACGTTGTTTTCCT GTATGCTCCTTGATGAAGGGCTCAGAGCTAAGCGCGGAGTAGGTGCTTAAGCCCCTTCCATTTGAAAGGAGCTTTAAACAC CTTTGGTGGCAGCTAAGAGTGTCAAAATGGAGGGATGTGTAGGGGACCTAGGGCCTGGGTAACATTGTCCCAGCCCAGGG CCTATTGTGTGTGTGTCTCCACTTTCCAGCCTTTNGGGAACGCAGAGGGGGACCTCTGTAATTGGTACCAGCANTCC 15 CTTCCTTGCAGGGTNCCNGTCCTTCCTCTNGAGTTNGGGGGNAANGGGGTCTCCANTGGNTTCTTCTACCNAGGTAGAN CCCNAGAATCACTTTCAACTTGCTCACCTGTCTGTGCAGTGTTTGAGTTCTTCCCTGGGAAGCTTGCTCACATCATCCAC NTPATCAGGCACNNTPACCCTCAACACTGTTTNNCCCATGGCNAATTATTTTACATGACAGTTTAAAAAAACAGGAATGCTCG ATTTGTATTCCCATTTTGCAGACAAGCCAAGGAGGCTTGGAGGGGTTGAATGGCCCAAGTTTCCTAAGTGGCCAGGGGC 20 TTGTCTGGCCTGTACCTGCCTTTTCTGAATGACCCTGTTAATTGCAATTGACTCTCCATAGAATGTGGATAGCAGTGCCA GTTGACACCAGACTAATGCTTCTGACTTTTCCATGGTGCCCCAGCAGCAGGCTGGAGGGAAGGCCGGGGGGGCGTCAGAGG 25 GGGTTGGGAGGAGATGTGGCATTTCTAGGAATTCACAGTAAAATCAGAAATAATTAGGAGATTTCACAGTTGTAGCTCCT GTGAAGATTCAGGAATTTTTTTTTTTTCTTCTTATTTGCAAGCTTTAGTCCTAGGCATGGAAAAAGAACTTTGAAGAAAAACCT GAGAGATATGAGTGTAAAACAAGAGAATGATTCCCTCTGGGGTGCTGGTAGTGGGGGGCTTAATTTCCTAAAGGCTTACTG GGTATCAGGGCTGCTTTCCTTTATAATCTTTTACCCGTCTTATGGGGGATGAACAGAAACACACTTTAGTGCTAGAAAAG 30 CTGGGCCCAAAAGACCAGTCTCCTGTCCCATACTTGGACATTTATTGTTCTTTTTGGGCAAGGTGAAAACTTGAAACCAA AAGTCTGTTGAGTTTGGAAGACTTGACTCCCAGGATGTACAAAGTACTTCTGCATGTGCGCAAAGTCCTGTAGGCCCAGG CATCAATGACACATGCAGTGTGGGCCCAGGCATCGATGACACACGCAGGGAAGCAACCCAAGCTGGGTCAGTCCTTACAA GGAGACCGGCACCTGGGCTCACACCTTGCCGTATATGACTTCATGGGAACCTCATAACAGACCTGTGGGCTCAGAATTAT TCTCTCACTTTGCAGATGAGGAAATGGAAGTGCACAGAAGGAAAGTAAGAGTGTTTGAGATCCTGTAGTGGGTTCATTGC 35 GGCACAGATTGGATTTTTTTTTTTTTCCAAACAAGTTTCACTCTTGTTGCACAGGCTGGGGGTGCAATGGTATGATCTTG GCTCACTGCAACCTCTGCCTCCCAGGTTCAAGTGATTTTCCTGCCTCAGCCTCTGGAGTAGCTGGGATTACAGGTGCCCG GACCTCAGGTGATCCACCTGCCCCAGCCTCCCACAGTGTTGGGATCACAGGTGTGAGCCACCATGCTAGGCCCAGATTGG 40 TCGCAGGGCMCAGCTGGTTTCCTTTTTGAATCCCACCCAGTGCTGGGGGCAAGTTTCATAAGCCTGTGACCACCCAGATA GGAAAGTGCCCAGCAACCCCAGGCAGAATCATTGTCTTTAAATGAGGGGTTCAAATTTGAACCNCCAAGCCTTGAGTATT GAGAAGAAATCGTTCTTCAGGTTTCGAGGAGGCCCGATAGAGAGTGTCTCGAGTTGCCAACGTCCTCTCTTCGGTCATG 45 GACTTTTAGCGAATGGATACTATTGAAGGAATGTTTCACTTCCAAATCCAGATCTCTGACTTCCCTTGAAAATTTTGGAGT GCCACTCAAGTCGGCCGCTCTGAGCTAGAATCCTGGTGTTCAAAATTGGCAGGAAGGGCACAGGGCAAGGTATAGGCTC ACGTCTCCACATTCTGCACCTCCCAGGCTCCTGCCATTGATGTGAGCGGGTTCCTGTATGAAGCAGGGGTTTGCA TCCGAAACAACCACCGTGCTGAATATGTAGGTGATACGTTGATCTGTACAGCAAACCACCATGGCACACATTTACCTAT 50 GCTATTCGGGAGGTGAGGCAGGGGAATTCCTTGAACCTGGGAAGCAGAGGTTGCAGTGAGCCGAGATCATGCCACTGCA AGGAAGGAAAGGAAGGGAAGGAAAGGAACCAGCTGCAAAAATTGTCCTAACTGAGCATTACTGTAACATAGAACAGC 55 TGAAACACTCCTCAAAGCTGAGAGGGGGTTTGGGAGAGAAGCAGGCTGTGGTTGTGAACAGGTGCCTCCCAAAAAAA CAATAGGACCCATCCTGGAGAGAAAAAGCCTTCTTTTTTAATTAGAAGCCTGGAAGGACATACCCTTTAATTGCTGCACTT  $\tt GTAGTGTCAGGGTTATCAATATCCGTGGCTCTTTCATTAATAAACTGGCGGGTCAGAAAGCAGCAGGAGTGGGAACCTCT$ 60 ATCCCCGCCTTCTCGCTTAACCCAAGCAAGAGGTAGTTAAACGCCCCCCCAGATTGCCAGTGACTCCGGGAATGCCTAAGT TTATGTATGGATTAACACAGTGATAGACCCTGAGTAGCAAAAGACGAAGACTAATTACCTGACAGAACTCCCCTCCACTC GCCTGGGTCATTGAAATTAATTTCTGCTTTCAAGCTTGGCAGAAAGCAGCTGCAGAATTTCAGTTCAATACTTAAATTAA 65 CGGGGAGCCGAAATTATTTCTGTGCACAGGCAGTATTAGAGGAGTGGCTTACCAAATAGATCTTGATCGCAGACACGGAA AAAAGGATTATTCCTCCCCTTTTATCAAGAGCCCGAAAGTCCTTGGAAAATGCAAAGAGGGGGGAAAAAAGAAGAAGAAAAAACA TCCAGAGATAATTTGTGAATATCCATTCTATAGCATCCCATGTTGTCAAGAAGGTGTGACTTACTGCAAGGTTAAGGAA

ATGGGTGGAGAATGTAGGGAGGAGGAGGATAAAGGATAGGACTAGGAATCAGAGTTGGGATTTGAACCCAGGGCTTC AATGCTGCCTAGGTCCACAGTCCTCAGTTATTTGTTCCTGTGATTTTCGCGNCCACCAGGAGCCAACTTGTTGGATGAGA 5 TTTCCGGGCAAGTTGAGTCTCCATGTTTTTGTCGTGGGCTACTGCCAGCTGAGATATGGATGAAGACTCCCTTTCATGTT TGCACATCAGGATACCTCAGTGGGGAACTCAGGGGCGTGAGGCACACTCATGACAGATGCAGGAAAAACATCTCTTTTCTA ACTGTCCAGCTCTTTAGGATTAGGCAATACTTTAATAATCAACCAAATTCTGGAATCCTACTGCCAAATTATGGCACTCA  ${\tt TCCTACTTGGTGTAAAATCCTGGGATGATAGCTTATAATAGTAATAATAAGACCTGCTTCCCGGTGATTCTCTAAGGATT}$ 10 AAATCAGTTCATGGAGATGAAATACTTAAACTGTGCCTGGCACAAAGTAAATGTTAGTGCTACTATTATCCCTGCTGCTG TTAACCCCAACTAGATAAGCCAAGATAAGGTGCTCTCCATTGTTTACCTGAACAGGCAGAAAAGCTCTATGCAGCTATCC AGACCCAAGAGGATCCGACAGCTCTGGAACTTGTAATATTTGCAGCATGTCTTGCCCTCTTAATGTCTAAGAAGTCAAAA AAGGACACGTATGCCTAGAAAACATGAATAATTATCATCTATCAAATTTTTACCATGTGCCAAGCATAGTCATATTTGGC TAACGAAAACAACAAAATCAACCGTGACAAGGTTTTATTAGTAATGAAACTGAGGCTTCTGGAGGATCTGTAACTGTTGC 15 AAATTTCCAGTGGCTAGTTCAGGGACAGTGCCGGGGCTTGAACCCCTGTCTCTGTGTCTCCCCAGCTCATAAGGTGTGCTA CCAAGTCACCCATGAGTAGCAATTAGGCGACTTCTAACATGTCCAGCTTTAAACCTGTGACCTCAAGGCAAATGACTTCC TAAGGCTGTTTCATGTATGATTTTTATATCTTGGCTCCTAATAATGGCCCCGTTGTAAATGATTGTCTCACTATGATATA CGGGTTCCTTACCTTCTAGGAACTGATTTAAAAGGAAGCCCTAGACTTCTTGTGCCTGTAGAGTTTATTCATATCACTCT 20 CACAGCTGGGTGCGTGACGCCTGTAATCCCAGCGCTTTGGGAGGCCAAGATGGGCAGATCACGTGAGGTCAGGAG TTTGAGACCAGCCTGACCAACATGGAGAAAACCTGTGTCTTCTAAAAGTACAAAATTAGCCAGACATGGTGGTGCATGCC TGTAATCCCAGCTACTCAGAAGGCTGAGGCGGGGGAGATCATTTGAACCTGGGAGGTGGAGGTTGTGGTAAGCTGAGATCA 25 TATGTCACCTCCTCTATGCAAACAAAATTTTTAATTATTCCTTAGAATGAACTTAGGAGAGCAAGTCTGTGGGAT 30  $\tt CTCAGCCTCCCAAGTACCTGGGATTACAGGAGCCTGCCACCACGCCTGGCTAATTTTTTGTACTTTTAGTAGAGATGAGG$ GAATATAGATAGGAATTACTAAGGAAAAGTGTATTTTTGTGGAATTCTTTGAACTCGTTACTATTAGTAAACGGTGAGTT 35 GTTACCAGAATCTATCAAGCTCTTTCCTATCGAAGGGTTTTTTCCATGTACTGGTTTCTCTCCTGCGTGGTCTTGTTCTA  $\tt CCCTTGAGGAGGGTACCACCTCCTCATTGCTTAGTTGTCAGTATAAATGCTCCTTTCTCAGAGAGGCCCCATCCTGACCAT$ CTGTGTTTTTTTCCTATCAATGCTTTAACAAATGACCACCCATGGGTGGCTTACATACCATGAATGTCTTCTCTTACCAT 40 TCTGGAGGTCAAAAGTCCAAAATGGGTCTGTCTTAGTCCTTTTGTGTTGCTATAAAGGAATGCCTGAGCTGGGTCATTTA CAAAGGAAGGAAATTTATTTGTCTCATGTTTCTGCAGGATGTCCAAGAAGCATGGTGCCAATGTATTTCTGATGAGGGGG TCAGGCAGCTTCTACTCATGGTGGAAAGTGAAGGGGAGCCAGCATGTTCAGAGAACATATAGGGAGAAAGGGAGCAAGAG AGGGGAGGGGGGGGGGCCTTTAAAAGAACCAACTCTCTGGGAACAATAGAGGGAGAACATTAATCTAGCCATGA GGGATCCACCCCGTAACCTAGACTCCTGTCATCAGCCACGCCTCCAACATTGGAGATCAAATTTCAACATGAGATTTG 45 GAAGCAACAGACATCCAAACTATAGCAGGGTCTCCTTGGGCCAAAATCAAGGTGTTGGCAGGGCTGGGCTCTGGGGGCTT  $\tt CTGGGGAGAATTTGTTCTGACTTTTTWCGATTTCTGGAGGCCACCTGTGTTCCTTGGCTGGTGGCCACATCTTCCATCCT$ TAAAANCCAGCAGTGCAGCGTCTTCAATTCTNGTCCCTGGCTCNTGCTCCTTTCTCTCCCCCCTCTTCTCTCCCCCTTTTGTNCA TCTTTTTAGGTTTATTTGTGACCCTTTTAGATCCTTTGTGACTGCATTGGTCTTCCTTGGGTAACTGCGCATACTCTCCTC ATGTCAAGAACTTACATCCCTCTACAAAGTCCCATCTGCCATGCCAAATAACACCTTTGCAGGTTTCAGGGTAGAGCATG 50 GATGCCTTTTCNANTTTTGATTINGGTTGTTTTTGGNTAGAGATGATATNCTTGCTCTGNTTGCCAGGCTNGATNCTCGG ANCTCCTNGGGNCTNCCATCAATNCCTNNCTTGCTTNCCCNAAAGTGCTGGGATTANTAGGTNGTGAGCCAGTACNACTT GGCCTTTTINGGCACCATTATTCTGCCTGNCCATCCTGTCCTAACTAAAGAAAGTAAGGTCCCTCCATCCTCCATCTTAGC ACCONNAGGCTGGGGTGCANGTGGCGTGATCTTAGCTCACNTGNCATCCCCTGTCTNCCCGGATTCAAGCAATTCTCTGG 55  $\tt CCTCAGCCTCTCTGGTAGCTGGAATTACNACGTATGTACCACTACTCCCGGCTAATTTTTGTCTTTTTTAGTAGAGACTAG$ GTTTCACCATGTTGGCCAAGCTGATCTCAAACTCCTGACCTCAGGTGATCCGCCCTACTGGGCCTCCCGTAGTGATAGGA TTACAGGCCATTGTGCCTGGCGTATATATTTTAAATTTTATTTTTCAGTTTACTTGGTTTTGCCTCCTTCTAGAACTAGA GTCGCGCTGTGTTAGGCTGTGTTGGCTGTGANGTAAGAGAAGTCTCACCCAACTAGCTGAAGCGAGGTGGGTTGGAGGGG 60 GGATGCCTTGTGGAAGTGACAACTCTAGGCACGTAACTGGCTCAGACTCTGCTGGGCCCAGATATACAGATGTCATCAAG AGTCTTTCTCTTTTGAACCCAGCTCTCCCTTTGGGACCCAACACTTTCCCTTCCCCGATGATGGCCAAACCTTGAA GATGTGAAACTGCCCAATGCCCCAATCTGGAATCCACCATCCTGGGTCTAGCTGGGGACATCCTTGAATCAGCCTCTGG  $\textbf{AATCACTGAACCAACATGAGTCACTTGCTACTGTGAGATCTCAAAACACATGGATCAGGACAGAGGGCCAGGGCTGTTTCCAAAACACATGGATCAGGACAGAGGGCCAGGGCTGTTTCCAAAACACATGGATCAGGACAGAGGGCCAGGGCTGTTTCCAAAACACATGGATCAGGACAGAGGGCCAGGGCTGTTTCCAAAAACACATGGATCAGGACAGAGGGCCAGGGCTGTTTCCAAAAACACATGGATCAGGACAGAGGGCCAGGGCTGTTTCCAAAAACACATGGATCAGGACAGAGGGCCAGGGCTGTTTTCCAAAAACACATGGATCAGGACAGAGGGCCAGGGCTGTTTCCAAAAACACATGGATCAGGACAGAGGGCCAGGGCTGTTTCCAAAAACACATGGATCAGGACAGAGGGCCAGGGCTGTTTCCAAAAACACATGGATCAGGACAGGGCCAGGGCCAGGGCTGTTTCCAAAAACACATGGATCAGGACAGAGGGCCAGGGCCAGGGCTGTTTCCAAAAACACATGGATCAGGACAGAGGGCCAGGGCCAGGGCTGTTTCCAAAAACACATGGATCAGGACAGAGGGCCAGGCCAGGGCCAGGGCCAGGGCCAGGGCCAGGGCCAGGGCCAG$ 65  $\tt CTGTTAGAGAAGGGAATGGATGTCTGAGGTATGCTAAGCCTAATCTCCATCTTCTCAAAGCTCCACTGCCACTGTCCCGT$ 

CCAGAGATGAAACCCAGATCTAACTGGACCCAAGACAGAAATTTCTAGAACAGAAGCCACAAACGTGTTAGCTAAGTCTG AATGAATACATTACCACCTCCCAGGAGTTGAATGAAAAACGGCTATTTCTTTAGGACGTCAAACCACCTTTTTCCTCTCT AATTCATGCATATCCCTATACAAAGACCCAAGGTGGTGGTGGGGGCTTTTTTAGATAGTCTGGAGGCCCTCTGAGAATGC TGGGGAAGAGTTTTTGTCAAGATCANTTTTTGCAGATGGTTGTAAGGTAAACAGTCACTGGTCCCTAGGATATCTTGCTA ATGAGACACCAAAGATACACATGGACAATGGCCANGACCNATATTTTNGTCNACAGNAATGCCGACCCNACAANGCTCTG 10 GAGCNAGTCAACTCAGAATGGTCAGGACTTINGGTCAGNTAATGCCCANTTTTTGTCAAAATTTTGTCCCCACTTCCAACGC AGGACCAACCAGAGAAAGCCACATATGCTCCCCAAACCAATCATACAGGGATGTCCTGGTCTAGGGAGCCCACCTCCGGCT TCTCCACCTCCTTTGAGCCTCTGCCAAACACAACTGATGGTGGCTGACTGCCTGGCTGCAGGAAGTTCTGAATAAGTGAC CTCTATTTGTTATTTTGGGTCCCCTTTGTTTATTTTTTACACTAGCTTTGCACTAGGTTAATTTTTTCCCACATGGCTT 15 CTCTGTCACCCAGGCTGGAGTGCAGCAGTGTGATCTTGGCTCACTGCAAACTCCACCTCCCAGGTTCAAGGGATTCTCCT GTAGAGACGGGATTTCACCATGTTGGCCAGGCTGGTCTCAAACTCTGGACCTCAAATGATCCAACCGCCTNCGGACTTCC 20 GAAGTGCTGGGATTACAGGCGTGAGCCACCGTGACTGACCTGTTTTTAATTTTTTTAAMGAGACAMGAGMTTTCACACTMG TTTACCAGATTGGAGTGCAGTGCTAATCCTAGCTTACTGCAGCCTGTAGGTCCCGGGCTCAAGCGATCTTCCCACCT GTTGCCCAGGCTGGTGTTGAACTCCTGGCCTCAAGCGATCCTCCTGCCTCGGCCTCCCAAAGTGCTGGGATTACAGGCTT 25 CTITICCCTTCTGTCCTTTACTTATGACTCTGCCCCCTTTTGACCTCTGCTAAAATTATTTGTTACTGTTATGTTATGTTATT ATTTCATGTGTTAAGTCTACAGTGTATAACTTGGGTTTACTTATCTCATTTAACCCTTAGGAAAACCTTACACTTAAATA CTCAAAGCCTTGATTTTGCAGGTCTGATTGATGGGCATACAGAGGAATTAAATGACCTTGTCTTCCACATATGGTATAAG GCACAGTAGTGGAAGCAGGATCCAAATCTGTGTCTGTGTTTGGATCAACAGCCCTGGCCACCATCTTGATTCATTTCTCT 30 AGGGAGAAAAGCAGGACAAATGAACGCAGATTAAGGAAAATAAAAAAGAGTGTTTGGCTAACTTGCATAAAAAAGGATCTC ATTITTCTTTCMTAACACATTACTACATACAGTGACCATAGTGTTTCTCTAATTTCTTCAGGACGTACTTTGAAGATGAA GAAGTATGTGTATNCCGCTTTTTTGTCTTTNCAGAANTAACATACTGCTGNTCTGTAAAAANTACNAGANTAATTINCTNC TCTTAAATTCCATAAGCTGGAGACACTGCCCCTGTTCAAATGAATACAGATTCATTTTTGTCACCTGTGTGAAATTGGTG 35 TCCGTGTGCCTTGCTTACGCTGTCCACCATGACATCAGCCTGCCCATGCAATGCTTGAGATTTGCCCTGTGACTCAA TAATACTTTTAAATCAGAGGCCAACATGGACTTTTAGGAATTCCATTCACAGTAAATTTTATGCGTGGTGAAAGGNTTAT GGAATGGGTTTCCATGCCATGTCTCCCCCTGTCCCACAAATCTCAGCTGGCCTGCAAAGGTTCCACTGTGGATTTTTGCC 40 AGAGAAAAGGTGGCTTGGCTGTTTGGTTTATGTCCTAAAACCTTATCGGAATGTGATTCTCCTTAACAAAAGGGATTCGT AACCTTAAGAATGATAAAGAATTGCCTTTTCTGCTGTTGGATTGATAGCTCCTTGACTGCTGAAACCAATTGCCCATCTG TTCAACTGGTGGATTCACGAGGAGGTTAGACCCCTGACCCAAGGCCCAGGTACCTGGCTTTCCTCAGTTGGGATCAGAAG CCCACAAAGTTTTCTTATATTTTAAGCATCAAAGTAGCACCACTGTACAGCATCTTTACTTAATCTGCCCTCTTTCACGT 45 CCAGAAGGCTGTGGTTCCTTTGTGTCTACAGAAAAGATATAACGAATTGAATTAGACTCTTAAATATCTGTGGATGTCAG GTTGAATACAAGCAGCTATTCAGTGTTTTACTCTGGCAGGAGAACAAGTCCCCTGGAGGTCAGAAGCCATGCAGGTCCCT GGAAGTGTGAGCAGATTGTTAAAATGGTATCAAAGATGGGCTGGCATGAGGCCAGAGTCTATCCTTGATGCTCACCTGAG GTCTAGGGCTAAACTCTTGCCTTTACCTGTTCCATGCTTAGCCGTTCCTGCTTTTTGCCTAGAACCTCAGTGCTATTGCT 50 ATAACTGAGGAGTAGGAGGGCCAGCAGCCCAAATCTTTGATGAAGAACCTCTTTTCGTATCAACTTATGCTTTTGGAACGAGA CACTGTTGGATGGGAATCTGGCTTCTAACAAACTGATTNGGTTGGACTCATGCCTTATTCTTTCGGAGCCTTAGWTTTG CAGGGATGCNTTGCCATTATNCAGTTACATTATTATGANGGATTANTTTTCTACCTAGATCAGGTATNAAGGTGGATGTA 55 TTATTINGCCATTCCTAGGNACTGTTTTAAAGGAAGTACCTATGANGGNCCTCATGATAAGCCAGATGTCCAGAAGCCAGC TTGANGACCAGGGCTCCTGGTCACTTAAAAGATGTTTGGGGCTGGGCTGGTNGGCTCACACCTGTAATCCCAGCACTTT GGGAGGTGGGCAGATCACGAGGTCAAGANGATCGAGACCATCCTGGCCAATATGGTGAAACCTGTCACTACTAA AAATCCAAAAATTAGCTGGGCGTGGTGGTGAGCNACCTGTAATCCCAGCTACTCGGGAGCCTGAGGCAGGAGAATCACTT GAACCCGGGAGGTGGAGGTTGCAGCGAGTCAAGGTCACGCCAGTGTACTCCAGCCTCGGTGACAGAGCGAGACTCCGTCT 60 ACTCTATAAAGGACTATAAAAAAAGTTGTAATAAATTATGCAGACCCCTCAGCAGTTGACTCACCTCTCTGGTGCTCCAG ACCACCCATGACTCTGGATTTATCATCCTCAAGAATTGGGGGCTGTGGAAAAGATGCCCAAATTTGTTCTTTTCAGATTTA GGTTCTTCTGTGATAAAAATAGACTTGGTAAAGAAGCAGATATTTCTTTAATACGTGTATATATTAGACTGTGAATTTAT 65 TCATCTTCCTTATTCATCATATAAGTAAATTATATGATTGGATCCCGGCCTTAAAACGTGATTTGACTCCCCCTTGCCCA CATCGTAGAAGGAAGAAAATGAAGAAAAATTTAGAAACTTGGACAGAGGAAAATGAAAAATGTTCTATTAATTCCACTA 

ATIKTTAGTAATTICCTAAGATTATACCATGIVTAAATGAATTGTATTTTATGTAACCNATTCCCTAGTGTTGGATAGCTAN TAAAAGTAATCAGAGCAGTAATAATAGATGACTCCCCAAAATCCTTTTGCCTCTAATGATTAGTCTAAGCCCCATAATGCT GTGTTCCTTGCCAGTGATTGGTTTAGAAATAGGTATGTGACCCAGTTCTGACCAATGGATATGGAGGGTGCTTATGAGGA 5 AGGTTTCCTACTCCTAAAAGAGATACACAGGAAGAGAGACCTTCTGCTTCCTCTGGACACTGGCCACCCTGGACTAGCA GTTGGCAGCTTGGGTTTGGACAACCTCCGACCTTAGTTGAAAATGACCCTGTGTAGGACAGAGGAGCAAGTGGAAAGAAC  $\tt CTGGGTGCATTGTGGCATTTTAGAGCCACTGATTCAGCTGTCCTATGGGCCTCCTAACCCGAACCTCCACTGGTCATGAA$ ATAAGCTGTTAGTTTGGTGCAAAAGGAATTGCAGTTTTTGCCATTGAAAGTGATGGCCAAAACCACAGTAACTTTTTAGCA CCAACTTAATATTTTGAGTTGGGTTTGAATCACGTTGTCTATTACATGCAGGACACATCTCTAATCACGCGAGAGGT 10  $\tt CTGAGCAAACGTCTTCACATTTCACACTGCAGATATTCTTACAAAAGGCAAAGCAGAGATCCAGAGAAATTAAGATCTGC$ TCAAGGTCGTATCCAGCTTTGGGAACCCCAACTATTGCAGAAATTTCTGAAGTCGTNCATNANTTGCTACTTAAANGCAA AATGCCTTCTCCTAAATCCAGGTAGANGAGAAACTCTCAAAAGGCCAGGGTCTGGACTCAAGATGAGCACAGGATTTAGAA TGGTTTTCAGACTCTTTATTGGTAAATGAAGTCAGCTTAGTGATATGAGAAATATGAAAACANTAAATCCCTTTGTAAAAA 15 TATAAAATAATCTTACAATCATCATCGTCATCCTCATCATCGTGTTCCTTCACACCAGCGGTATTTATGGTATTTATCAA CTAACTGCTGTGTACTATTGCAAAATGTTAGCAATATAGTAATGNAACAAAACAGATGTTATCTCTACCCTTAT GGTTTTTATATTTTAATAAAAGTGGCAGAAAAGAAATAGGTAAAACTATAAACTGNAGCTCTTTGGAGAANGAGGCCCAC 20 TAAGATTTTGGGGCCTGTGAATTTTTTTAACCTTTCTTAACCTACATCCTAATTATTTGATTTGACATTGTGATGAAAACA TACTGTTGTTTTGAATTTTGGAAATAGACCAGTGATTCTTCAGTAGGGTCGTAAGGTCCCGTCAATGCAGCAGTCAAATT TPTTCTTGGTGGGGGGATGCANINATGTGTATGNTGTNGTGCANTGAGTATCTTNGATAATTTANGAAAGATTAATTAA ACATTGATCATCTATGTGACCACATTTAAAATGAGCACCACCACATCCAAATGTCTGAGTTTACATTTTGTGTCGGTACT TGCTTTGGCAGAACTCTGTGCCTTTCCCCAAGTCTTCTGTGACCTTCTCACCTGGCCTGCATCCTGGTCCTTNATCAACC 25 GTATTTTACAGTTAAGGAAACNICGGCTCAAACTAGCTTCGGGGNACTCGCTGGCNCATAGGTGCCCCTAGGCTGCAGT CTGAGAGTGAAACTGAGGTNCTCACTCCCTTCATACTCTGCTCTCCGTCTCTGCCTCATCTGGCTTCTCAGGGTGGTGGG GCGTGGGCACTAATTTGATTTGATCACTTAGAGACAACANGCTTACAAAATGCTACCGAGCAGTGCCTGTCCTTTCTGAG AACTTGATATAATAACGTTGGCTTGATCTCCTCAGCCTGTGTCTTGAGGGAACAAGTAAATTAAACAAGTAAATTAGATCC ATAATGTTTTTAGAAGTTAGAAGATTTAAATATATGAATCTCATCTGAGTGTGCAGCCTTTTGTCTGCTGTGTTTCCTGC 30 CAAAAGATCTCTTGACAGGAAATAAACATTAAAATAATCTTTAATCCCTTGTTTGGTCTATTACCATTAACAATTGATGC ACTTTAATTTTGTGGGGTTTTAACTACAAAATGGAACGGCTAAGTAGTGATAATTGGGTTTGGAATTATACGGTCATTTA TPTCTGATATGTTCTTCTGTGAACAATTATCACCAAATGAAAGTAAACAAATCTGTGATTTGAAGCCTTATTTAGAAGTT 35 AGCTCTGTATTCGAGCGTGGTTATCTTTGTGCATCTTAAAATCCACAATGCACAGCCTGGGGAGAAGCCTTGGTTTTGCC AGGGGGAAAAATAAAAAAAAAACACAACATTGGAGTGAGGGTCTAGGGTGAATGGCCAAAAGTCTGTTNTTGAAATGAGGGT GGTGGGTAATTCTCTCTCTTTTCTGATTTGCTTCAGTACAGTATGGGATGGGGAAGAATCAAAATTATTATGTCAACAT ACCTCTCTGTGCCTCAGTCTCCCCCATCATCCTTCGGTGGTAGAACAATGCTATCTGATGAGGCCTTTTTTTGGGNATCACC 40 GCGTAAGGAAACTTANAAATCNATGGCAGAAGATGAAANGGGAAACAGGCATGTTCTGCATGGCTNGGAGTNAGGAGGCA AGGANGCGAAGGNAGGANGGNIANCTACCCACTITTAAACNAACCAGATNCTNGGTGAGAACTCACTCACTGATGAGA A CAGCAAGGGGGAAAT CAGCCCTCTGATCCAACCACCTCCCACCGGGCCCCTCCTCCAACATTGGGGATTGCAGTTTGAT45 TACAAGGGGTTCCTTCCAAACCCAAGCGCCACAATCCTTAGGCAGATTGCTCTGACACAGAAGACTGGTGAGTTCTAGAC  ${\tt TTGATGTGTTTCATGGGAAGACAGGAAGACATTTAGGGAAGGCTGTAGATACACAGCCGCTCTGTTTAGGGAAGGCTGTCG}$ ATGAGCGTTTTGCTTCGTGTACTCATTTATTTCTGAAAATAATGNCAGCCCCTTGTAGGGCTTTCTGGCTAATTGAGTGG 50 TGCCATCATTCATGCAGTTGCACAAATTCACACACCAGGCTGCCACTTTGGCCCCTGCGTCACCTTCACCACCACCCAATG TGTCCTGCTCATCACTGAGGTTTGTCATTTTTACTCTGAGTCTGTCCATTGTCATCATCTCCACCATCACCCCTTTTGTT CTCATTGCCACCCNTTGCCTGGGGTGAGTGAAGACGCTCTTCTCTGGCTTCCACCCTTCCAAATGCCCTTAACCCACAGA TGGGAAGAAATGAGGTGGGGGGAAGGGGACTTTCTTGCTTCCTCATAGTTCTCCCCCATCCTGTAAAGGAGCCTATGCT 55 ACTACGATGCATGCGGGTCAGTAAAAGGAGAACACAGAAGAATCAGCAGACCCAGAGTCTAACCCCTCCTCTAGTTAAAGACGTGACCCTGGCCGGGACTGAAGCCAGAGGCCCACAGCCTACTGGACCTTTGTTTCTTGCAGTCAGGTTCTGATGAC AGATTTTAGTCCCCTCTTGAATTTCCTTGGATGTGATGGAAGTGATTCTCAGTGGACAAGAGGTCACATTGCCTTTTCTA GCTTGGAAGGTGGCGCAAATAACTGCTTGAGGCTCCCTCTCTTGGGCCAAGCTTGACTCTGGATTTTCATTGGTGGCCTT 60 GTGCAAAGCCTGGCGTGATTGTTCTCATTAAAAAGTATAGTGTAATACTCAATAAATTACTTTTGTTCTCACCTTGGGA AGTGGACTAAGAGGCCAAGTGACTTTGATTTTCACTTTATCCTGGAGTTTCTCAACCTTGGCACTATTGACATTTTAAGC CAGGAGATTCTTGGTTGGGGGGGATTTCCTGTGAGTTACAAGACATTAAGCAACATCACTGGCCTCTACCCACTAGATGC CAGTAGCATCTTCTATTTCCTCAAGTCTCAAAATACCAAAAACATTTGTAGATACTGCCAGATACCCCTGGGGAACAAAA TCACCCCTGGATGAGAACCCCTGCTTTATCCTCTTACAGTTTTTCGTTCTTTCCATGAGAAAGTATTTTTAATAGCAAAGT 65 GCTCTAAACACTTGCCATGTAGTCACTAATTTAATCCTCACAAGAATTCTGTAATGTAGTGTAGTTTCCCAGGGCTTCCT  ${\tt CGAGGTGTTGGCAGAGTTGGTTCCTCCGGGGGCTCTCAGTGAAAGACCTGCTGCTGCCTCCTCCTCCNNAGCCTCTGGTG}$ GCTGCCATTAATCCTTGACATTCGTCGGCTTGTGGCAGCAGAACCCCAGTCTCCGCCTCCGCCTTCACATGGCCNATCTT

CACTCTCTGTCTTTGCTCCCTTTTCCTATAGGGACTCAAGTCATTGGATTTAGGGCTCACTGGNAATCCAGGNATGACCT CATTITACCTTAACAAGTTGNCATCTGTGAAGANTTCCATTTCTAAATNAAGATCACATGCTANNGGGCTGGGCACGGTG ACTTGGGAGGCTGAGGCAGAAGAATCCCTTGAACCTGGGAGGCAGAGGTTGCAGTGAGCCGAGATTGTGCCACTGCACTC 5 GCACACATAAATTTGGAAGAAATGCTCNTTTAACCCAGTATGAGCACGTGGGATTCTTATCCTCATTTTACAGATGAGGA AATTGAGGCACAGACAGATTCAATAACTACGTGACTCACAGAGATAACCGTGTAGCAGAATCAGGAATTCAGCCCAGTTT TTTCAGTTGCACAGCCTGAGCTCCTAACCANTCGCGCCTGGGGTTCTCAAAGGCTCGTCCCCAAGCGACAACATCAGGGT NCATCTGGGAACTTGTTAGATGTGCTCACCCTCAGGCTCGCCCCACCCCGGCAGACTTCCTGAACCAGAAACTCTGGGAG 10 TAGGGCTCAGCAATCTAGTTTTAGCCCTCCAGGGGATTCTGTGGTGCCTAAAGTTTGAGAACTTCTGATCAAAAAATGCCA TTTTACCAGTGCCCAAAAGTCTTAGAAAAATGACAATGTTCATATATTTGCCCACATGAAGATAGAAAGTGTCATGTCAA 15 TTTCAGAAGAGCAAAGTCCGGGTCCCCAGGCTCAACTATCAGCCGCCTTCTCATCCCAAGGGCTGTCACCACCAGAAATT TAACATGCTGTTAGTGCATGCAAAAAAAGCCCCAGTAATTGTAGGGCTCATCAGTACATTGTTAATTGATCCTCATTTCC TATTATTTTACCTCAAAGCAAACACATCATTCACCATAGTGACACCAGAGTTGTTTATCTTCTCTGTGCAAGTGTGTGCT CTTTTTAGCAAGCTTTTTGGATCCTCTNGTTTCAGAGGGCCTTTCCCATCTGTTTACTATTGTGGACTGTGCTGCTTTTT TTGTTTTTAATTACAGGTTATATAAAATATTGTCAGCAGGAGGGGGGGTTATTATTACCTTAAAGAATAAGTGGTAGATGC 20 GGACTGGCCACTGTGAGCCCATCACTAAAATGCACTTCCGTACACTAAAAGGTCCCTCTTCCCTGGCAGACAGTGGTTCAT TTTATTTGAGGAGGTATGTTGTGGGCTTGGGCNAAACAGAAGGAAATTGGAGACATTGATATGCTTCCTGAGAGGTGGAA AAAGCTCCTTCTGTCTTTTTTTTCAGAGAATTCACAAAACAACTCAGGGCCTCCTGGTCCTGCAAAAGTGTTTACTGTTTA TCTTGTGTTGGTTCCGGCCTGTTTTTGCTTGGCCACCAACTICCCTACTCACTTGGGGGGAAAATAACCCAATCAAAGGA 25 GGCAGCCATCATTAAAAGTTTGTTATGGATTCTTCCAGAAACGTTCTATGCATTTAGCATCAGTTGCAGATATGGATAGC CTTTTCAAAAAATGCATGCAACTGAGACTATTGGCTATGTTTTGTTTATTACCTACTTTTTCCATTTAATAGTATCTTGG AGATTATTTGGTACCAGCACATGTAGCTCAACCTCCTAATACTGCATGACGGATAATATGCCATCACATGGTGTCATTTA 30 CATGTATATTTGGTCTGCTTGAGCAAGGATATTGGGAGGAGGAGTTTCCAGCAGCAGCAGTGGTGGAACAAAGGCACTGT GTACACCTTTGAAACAATTAACTTCACCAAAATTACTAAACTGTCCTCTAGAATGGTTAAACCAATTTCCTCTCTCCAT TCACACGTGAGAATGCCTGTGGCCCCCAGAAATTATCTCCAGCAGCAGCAGCAGGAGAGGACTGGAATGCCATTGACAGG TCCCACAAGTCAGCAATCAGCACGCCATTTTTTAAAATTAATGTTGCTATTGTATCGTAAGGTTCTTCTGAAGCGACCAC 35 GACTITIATCTGCTTAATACAAAGTGGGATTGAACAGTTATTTGTCTGGATTTGATCATTCCTTATTAAACATTTATGATT CTGTAATAATGTCTCTTGGAAGAGATGTCTTGCTGAAAGGTGGGGAAGGGGTGGGGGCTCTGTGCATGGAATGGGGGGA AAAGCTTCAGGGAAGGGGCAGTGCAAATTGTTTCTGGACTGATGCCATCTCCTAATAATAGTAGTTAATAGAACGGGGTA CAATGGCTGACGCCCGTTAATCCCACCGCTTTGAGAGGCCGAGGCCGGTGTATCGCCTGAGTCCAGGAGTTAGAGACCAG 40 CCTGGGCAAACAGCCTGAAGCAAAACCNTCATCTCTACAAAAAATACAAAAAATCAGCTGGGCGTGGTGATATGCATCTG TGGTCTGAGCTACTCAGGAGGATAAGGTGGGAGGATCATTTGAGCCCGGTAGATGGAGGTTGCAATGAACCGAGATTGTG CCACTGCACTCCAGCCTGGATGATAGAGCGAGACCATGTCTCAAAATAATGATAATTATTGTAGTAGTAGTAGTGGTGGT GGTGGTGGTGGTAGTAGTACTAGTGAATGCCCTGACTTTGGGGTTTGCAGTAAGCTAGGATTAAGTGCTTCACAGTGAGG 45 TCCTGCTATCTGTACATAGAAGAATGTTTTAGTCAGAGGCAAGGCAAGGTCACCAGGATTCACTGAGAGTGTTGGTCAGC ATTTCATCTGCATATACAGGACTGGAAAATAAGAGAGCGTAATGAGACATCTANGTTTTTTTTTCTCTTTCGTTTGTTCTGT TTCCCACTGAGAGAATTTTCTAGCTTTATNGTGGAGAAAACAGTATTGGAAATTATTACTNCAGTTCAAGAAAACCTCAC TGAGCACCTACCATGTAGGTGCTCATCCCGATACCACTATCAGGCCCTTTGGACCAGTTGCAAGGATGCAGGATGAGGAA GGCAATGTGAGAAAACAGAAGGAGCACCAGGCAGTCGTGGGCTTGATTTTTATTTTACTATTTTTTAAAAAACATAAAAC 50 AACATACATTCATCATCTTTGCTTTCTTTGGATGAAGAATTGAGCCTGGTTCAGCATCTCTTGCAGGCTGTAATTGAGGGT GGTCATTGACTGGGGCTGGATTCGGGAAGGATCCACTTCCAAGCTGCACAGTTGTTGGCAAGATGTAGTGTTTTGGTGGT AACTTAATCTTGGAAGTCACATCCTATCGCTTTGGTTTTTTGACTGAGATTATTCAGTACTGCAATAGTCTCCCTTTAAA 55 GTGGACAATTCATTGGCTTATCGTATAGTCACAAACTTGTGCAGACATCACCACTATCTAATTTCAGAACATTTTTATCA CCCCTAAAAGAAACCCTGTACCCTTCAGCCAGCATTCCCTATTTTATACCCCCGATCTCTTGACAACTACTCATTGACTT TGTTTCTATGACTTTACCTATTTCGGGTAATTGATATAAATGGAATCATACAATACGTGGCCAACTGACTTCTTTCATTT CATCCCCTTGTATCGCCAAATAATATTCTATTCTATCAATATATTATACTTTGTTTATCCATTCACAGTTCATGTCATGTCATTC 60 CCACTTTCTGGCTATTATGAATAATACTGCGATATGAACATCTGGTTACTTCTGGCTCTTATGGGTAACACTTCTATAAG CGTTGCCACAGGTTGCTTCTGATTTCTATTATGAGTAATGCTGCTATGAACATTCATATACAAGTTTTAGGGCAGACTTC TATTTTCATTCCAATATCTCTTTATGGCATGTCTTAGCAGTGATGTCTATGACATCCAGGATGTCTTGACATGTCTGA GACATTTGAACTACACCCTGAATGAAGAGAGCCATGCNAAAGACCTCAGCNAAAGAAAATCTCAAGNCACAGGTGCAGCA 65 AGTGCAAAGNGCCCTGGGGTNGGAAACACACTNCGATGYTGTTCAAGGGANGAGTAAGTGGTGAATGGGTTTGGAGCCAA CAAGGATAATAGACAACGCTATCAAGAAGGGGGCCCAACCACACATGTGCAGGCCACCTGGATGAACGTCTGGGAATTTT CCCTTGACCTTATGGTGATCACTATTGGGAGGTGGTAAGCAAACAGGTGACATAATTTGAATCATGGGTTTAAAAGACGC CATGGTTGCCATGAGGAGGACAATGCGTAGGAGGCAGGAGTGAAAGCTAAAGGATATGCTGGGAGGTGACCCTGGAGTTA

TAGGAAGTGGCAGGTTGGAGAAAAAGCAGTCACAGCTCCTGGCTGCTGTGGCTGCTTTGAGCTTCTTCCTCGATCAGGCT GGATCATTACCAGCCTGTACCCTCAAAGGATGCCCTTAGTCCTGTCCCCTCTCACTAGCAGGGATTCCAAGCTTGTAAAT -5 AAAGTCTCCCACTTAAAATGTGAGCAGAGTGAAGAGCTGGCAGTGTCAAAACTCTGTGTCCAGATGTTTTATGATTTTCC CTTTTCCAGATGAGCCCGGTGTATCCGTATCAGTGTGTCTAGGAAGACCAAGCATGCCGAACGGCCAGCAGAGTAGAAAC TCTGTGTGCCCATCCATTATGTACTCCCTGAATTAGGCTCCTTGAGGCTCAATTATTAAAGTGGGATTTTTCTTAATTAT TAACAGTTAAAAATAGGAAAATAGATTTCAAGGGGAAAAAATTTGCAGGCAACAAGAGTCCAATTCTAAATGTGTGCATG 10 TGCGTAAAACGGAATTTGCCAAACATGAATAGGCACTTACAATGTGACTGGAATTGGCTCTGTCATGTGTCAGCCTAATA GCCTAAACCCTGGTTCAATACAATGAACTTGGGAAGGTTTGCTTNAATGAAAGAACTGACGNNTTTTCTGTGCAGCGGCT GCATTCATCAGCCTGCATCCTGTTCANTTACACTACAAAGGGCTGCCAATGGGAATTNGGTAGGATCATCTNATTAGGTA AGCTGTGATGACGGGCAACAGATTTCCAAGTTGGCACGCGGCTTCTGGAGTCACGGGCTGAATTCCGGCACTGCCACAT CTTGCCACGCACATCCTAAGGGAGTGTANGAGAAGAGAGTTTTCAGTTATGCATGACACTGCCTTACCCATTGTGGATTC 15 AGTAGGGATATTCATAACTGTGAATTTGAATATAACTATTAAATAATTGAATTATTATTATTGAGTTACTGAATATAACT ATTGAGTTTTCCCTCTCCATCTGGGCACATGGGAAGGCCNGTACTTTCCTGACATGTGATTTGCTGTGGCGAGTGGAATC TGGGGGCAAGAGACGTGTGTCTCCTTGAGGCAGAAACTTTAACAGATTCCAGCCTGCTGCATCATAATCTCCTTTCCCTC 20 CCTGAGCTGACCCAAGACACACATGGAAACATIAATTGTGCTTCTGTGGGCTTTAAGATACTTGCTCTGTCGCCCA GGCTGTAGTGTAGTGATTCCANTCTCAGCTCACTGCAACCTCCACCTCCTGGGTTCGAGTGATTCTCCTACCTCAGACTC TCAAGTAGCTGGGATTACAGGCATGCACCACCATGCCCGGCTAATTTTTGTATTTTTAGTAGAGATGGAGTTTCACCATG TTGGCCAGGCTGGTCTTGAACTCCTGACTTCAAGTGATCTGCCCACCTTGGCCTCCCAAAGCTCTGGGATTACAGACGTG 25 GCTAAGGCTGGAGGATTGCTTGAAGCCAGGAGTTTGAGAATAGCCTGGTTAACATAGTGAGAGCCCCCATGTTTCTAAAAA GCCCGGGAGGTCAAGGCTGTATAGTAAACTGTGATCCTGCCACTGCACTCTAGCCTGGGTGACAGAGCAAGACACTGTCT  $\tt CTTTAAAAATAAATAAATAAATAAAAAAAAAAACACTGAGATTTGGGGGGTTACTTGTAACTGTGTCATAACCTGGCTCCTTAC$ TTACAGCCTATTTTTACAAAGTTTGAATATTGTAATTTGCCTTTAAAAAATTGTTTTAAAGATCTGCCTAGGTCAACAAA 30 TIMITATITACICTCTAGAACCATITGNATTGGGGTACTGCCTTAAGAAATAAAGCAGAMITCCTTCAGTCGCATGTGGG A GAGCAGGTCCATTAATTCAGGGGGGGATTTACATCAGTTCCATCTGCCTCTTTCCTAATGGGACTGTTTGGTTGTTCT35 GCGTTCTACGAAGGCTTCCTAAGGAGGCTCCATACTAAATTCAGACATAAGTCAGAAGGCAGCTTCTCCCAAGACACTGT TGATGTCCAGGGGGTGACAGTTCCATCACAAAAGGGGGTTNAAAANGGGTTTAGGGGGAAGTTTAGTTGTCTTCCTTTTAT  $\tt CTCTAACTCTAAAANCCCAACTGCTGGCTGAATTAAAAGTCTCTTACATAATGGTCAGAGGAGTTTTGAGTATCGGNATC$ TITGTGTACTTGCTTTTTAAATTCAGTCACGTCTTAAATAGTACTTTTCACTCTCCTCCTCCACACCACCTTTATGTGT 40 GTAGCAGACTATCTTTCTAGAAGCAGAGCTGTAAGTCTCTTTTAACACCATTTTCAAGCTTGGACAGGCTGACATTTTTA TTGAATGGGTTATCTCAATATATCTACTTTTTTGCATCCTACTTTTTTTAGAAAATTAAAAATGATATGATGGGTGTG  ${\tt GTGGCTCACGCCTGTATTCCCAACACTTTGGGAGGCCGAGGCCGGTGGATCACAAGGTCAGGAGTTCAAGACCATCCTGG}$ 45 TGATGAGAACACCCATTACTCTGCTCATTGTTCAAATGAACTCATTTGAGAGCTNCTCTCCTTTGNTTTCNTGTCTTTCT ATACCTCTGTGTGTGTCCTTATCTGTTTCTAGGATGTGCCCTCTGCCCCGTCACATCACACTCTGTGCTGCTCTCAGGC 50 TTTGAGAGGCCGAGGCGGGTGGATCACTTGAGGTCAGGAATTCAAGACCAGCCTGGCCACCATGGTGAAGCCCCGTCTCT ACTAAAAATACAAAAAATTAGCCAGCTGTGGTGGCACATGCCTGTAATCCCAGCTACTCGGGAGGGCTGGGACAGGAGAAC CACTGGAACCTGGGAAGCGGAGGTTGCAGTCAGCCGAGATCTATGCCATTGCACTCCAGCCTGTGTGACAGAGCAAGACT TCCTCTTGGGAATTCCGTAAGTACTTTGAGGGCAAGGACCACAAGATAAATGTCGTAAGGTAACCAGGAATGACATTCCA 55 ACAGGAGTTGTTATCTGCGGGGAACAGGTGAAGGAGTGACAGCAGGGGGTGAGGATAAGAAGGAGGAAGCTTTACCCCTG ATAAAGGGAAGAAGTGCATTCTGAACAGAGGGAATAGCAGGTACAGCAGCTCAGACATGGGCACCTTCAGAGCGTGTCT 60 GAGTCTTCCTGATGAGACACGTGGTGTTCACTTGATAACTCCCTGGCAGGTTCTCTTCATCGGGCCTCCACATAGGGTAT GCGAACCTCTTCATGTTTTTAAAAGGGAGAGATTTAATAAAGGCAATTTGGGACTTAAAAATTGTTAGAAGAGCTAAAAG AGTAGTTTTGAGGTTGACCTTCAGAACGGCTTCCTGAATAATACAGAAGTGACCCTCCAGGAAGGCCCTTCCACTGAAGC TACAACTGGAGCTAAGCNAGATGGATAAGCCAAAAACCAACCTCCGTTGCTGGCCCCCATCTCCACCACAAGGAAGCTG 65 ATAAACAAAGTTGCAAGGGAGTCTGGAAAGGGAGTTTTAACTCCAACTTCTTCAACTAGAATGGTAGGATCCAGGGGCNA GCNANTTGCTCCCCNAGGGGATNGTTTTTNACNAANTGTCTGGGANTATTTTTNAGTTGNTCAGAACTNGGAAGCAGGA AGAANGTNGCTACTGTCATCTAATGGGTCAAGGNCCAGTGATGGTGCTGACTATCCTACAANTCCATAGGACAGTACCTA 

AAAACTAGTTACAGTTCATTGGATAATTGCCTTTCATCCCTTCAATATGTGTTCCCTTGAAATTTGCATCCATGCATCCC ACATGGCACCCCTATTGATTATTTCAGTGACTCAGAAGACTTCATTATTCAAAATAATCTCTAATAAGATGTTTAGGGAG AAGGAAAAATAAAGTTTCTCTCCACGTTACGTTTTTTTTCTTGCACATGTACTGCTTTTTTCATAAGCACAATCTTATTAAT AGAACAAGTCCTNCTCAAAATGGTTGCCTTTCTCCCTTCATCCTCCCCCACCAGTAATGTAGAGCTGTTATTTGGCTCG 5 GAAGCTCCATCTTTGTTGTGAGGGCTTCTCTGCGTCAGTAGAGGCCAGCTGNAGCTCTTATTCACCCCTTATTCTCTGGT TCTTCTACCCAGGGTCATATCCTTGGATGTTTTTTCTGTGCATCTGTCTTTCCCGACCCTCCCGTGAVTTCTGGAAGGNAA ACACCTTTCCAAGCTNCCCCAGTGACCCTGGTTCATCCCGGAAATATCCAGGAAAAGCATTATGAGCATTGCAGTGCCAC 10 ATCCTCCATTCGTCTTACCTTATGAGAACTATTAGGGCTGATCTCTGAGAAACTTACCAGTGGTGTGTGATCGGAAAT CATGTCACCCTCTGAATGTGGGTTATGGGATAAATGGCTAGGTACACAGGCTTCAGAGTCCAGCCCAGCCCAGGTTTGGA TTACAGATGGTTGCTGTACTAGATGAATAATGTCCCCCCAAATTCGTGTCTATCTGGAACCTCAGAATGTGACCTCATTT GGAAATAAGGCCTTTTTAATTAAAAAAAATTTTTATTTAAAAAAACAGAGATAGAGTCTTGCCCATCTTGCCCAGGCTAGT CTCAAACTGTTGGGCTGAAGCAGTTCTCCTGCTTTGACCTCCTAAAGTGCTGGGATTACAGACATGAGCCACTCCACCTA 15 CCCAGAAATAAGGTCTTTATAGATGTAACTGAAATAAAGATAGAGATGTGAATGTGATCGTACTGGTTTAGGGTGGGCCC TTGGAGTGCCATCTACCAGCCAAGGAATGCCAAGGCTGTGGCTACACCAGAAGCTGGAACAGAGCCTGCAAGCATTT CTCCTGCAGAACCCCCAGAAGGGACTCAGCCTGCAGACACTCAGATTTCAAACCTCTGGCTTCCTGAACTGTGAAAGAAT GAATTGCTGTTGGGCCAGGTACAGTGGCTCATGCCTGTAATCCCAGCACTTTGGGAAGGCTGAGGCAGGTGGATCACTTC 20 AACCCAGGAGTTCGAGACCAGCCTGGGCAACAAGGCGGAGACCCCGTCTCTACAAAAAATANCCAAAAAATGAGCCGNGGT GTGGTGGGCCATGCCNTGTAGTCCCAGCTACTTGGGAGGCTNGGGATGGAAGCATCATTTGAGCCTGGGAGGTGGAGGTT ATAAATAAATTTCTATTGTTTTAAGACAATTTGCCTGTGGCCCTAGGAAACCAGTANTAGACAACTTGTGATGGTTTNAG 25 CTTATTTNANGTACAACAACCCTGCCCCTTCTAGTTTTTNATGATAACCTNCATTAATTGCCGGTACTCTCAGAGCCCTG TAAGTATATNTTAAGAAAGCACCATCAGTATTCAATTTGCCTTGCNTAATAAAAAGGGATCAAGATATGGATTGTAAAGT AGAAAAATACATGTCAATTAAATGGATTTACATCTTAAAAAGTGGTNGAGGTAGACACACACGGCACTACTCACTTCATTC 30 AGCAGGAACATCATCTGCTTTTGGGTAGTTAAGAGTTAAGTATCACTTTGAGCTACAGGATCATGATTAAAAAGCATTCT GTTATCTTACTTCACAACTCTCCACTTTTGTAAAANGTTTAGGATACCGGCAGGCCAGCAANATACCTTTAAATGATTTT ATTTAAATGTCAGATTTAATTAAATCCATGACCAGAAGACAAACCCAAAGGAAATTTTCAGGGAGCTTTAGAATTTTCCT TTTCCATGTTCAAGGTGATAACCGTAGCATAAAACTGTCCCAACCACATGCAAATGCAAGCAGGGGCATTCATCATGAAA 35 GACACCAGAAAATAGTGTATGGATTGGTGATTTTGACTAAAACTGGAATGTGGGTGTGCACTCCTCATGTTCCGGTTT CTGTGATCATTCAGGCATGCACAGGTATCCTGATGGGTAACCAGGTCATTAGGACCAAAGTCGGCAGTGTAGCATGGCAA GAGAAGTCATTGCATCTCCAAACTGTGCCTAAATTGCCTGTAATGGGTTCTTTGCAACTTGCAGAACCAGATCTTACCAT TTGCAAGGAGAATAGCTGAAAAGATACTTAAATAAAGTGATCGGATGAAATTTTAAAAACGGGAATGACCAAAAAAGATT 40 TTTCCAATGATAACAGCCATCTGACTTGATCGGAGTTCTATGGATTTTCACTAAAATAGAATCATCGCCTTGGTGATGGA TAGAAAAAGTAAAGCAATACATCCTGATAAATGCTGTGCCTTCCTCCTTCGTCTCTCTGGCGGTGACCTTGTGCAATCCA TAAGAGGCCAAGGCTGAGAGCCCCGGCCACCGCCGCCGTGTGTCAGAACTTTGGAAATTTAAGTAGCTTTGAAAACCCGTCA ATGGGGTGAAGGGGAATGGCCTGAGAAAGCAATGGATCATGCTTAGAGGGCTCAGAGGGAAATAGGGTACGCTGAAGGT CAACGTGCAGACATGTCCTGAAGGAACAGCTCAAGTCCTCATTCTCATTCACGGGAGGCTGCGGCCCTGTGAGGTGAGAT 45 CAGTAGAAGAGTACAATAAAACAGGAATTTTCAGAGCATGTAATTTCTTCTTGGAAGTGAAAGGCACTGGAGAATGGTGC AACTCTTCGCCTCTCTAACACCACGTTTATTCTCCAGCCCAGTTATCTTAGCCAACTGTGAACATTTTGAACACTGTGA TCATCGGTAATGACACCAGCACCATAACACGAAACCCCTCTAAAACAGGGCTTCCAGGAAACTCACAGACTAGTTACATC 50 ATTAGTGTTGGTTACGACTTGCTAAAAGAAAATATTAAGATAAAAATTAGATCATAAATTTGGAGCCACCATTACGAAGC CTAAAGTGCAAATTGCCAAACAAGTCAAGAGACTCATTAGCATTITATGTAAATCAGTIATTACTGTTCTCCACTTCCTT AATTATCCATGITATTTCAATACAACCCTTTCTTTGATGTCCCAATTCTATATTTAAATAGTGCAAGATTICTATCGTAT CCTCCCGCAGAGGTTTGTGCCATGCAAAAAACATGCCAAGAGCAGCTATTTTAGAGACTACAGGGAAATGTTTAATTGGT 55 TCATCCCATTTGAGTTATGAGGGTGTATTACTGAGCACATAAAATCAGAAACATGGAAAGTACTAGCTTGGAGAAGTTTA CTAAAACCTGCAAGAGACCGCTTGAAATTTTTGCCCCCAAGACTTTTTGGATTCTCGATGGGAACCGACTCAAAGAGAAAT TTCGCAAACTTCATGGAATTTTGCTAAGTGATTGATTTATAATTGAAATATTTGGAAATAAAATCCAACAGCTCTCTTTC CTTTCCCTCAGAGACTTATTCMTTTTCGTTCGATGAAGAGAACACTTGTGACAGAGGGAACAMTAGGGTGCATAAGA GAGTTTTGCTCTTTTCCCCAGGCTGGAGTGCAGTGGTGCGATCTTGGCTCACTGCAACCTCTCCCATCCAAGTTCAAGCA 60 ATTGTCCTCCCTCAGCCTCCTGAGTAGCTGGAACTACAGGCGTCCGCCACCATGCCCAGCTAATTTTTTGTATTTTTAGTA GAGATGGGGTTTCACCATGTTAGCCAGGCTGGTCTCAAACTCCTGACGTCAGGTGATCCACCCTCCTCAGCCTCCCAAAG TOCTGAGATTACAGGCTTGAGCCACAGCACCCAGCCAGACTTCATAGTTTACTCTTATTAMPTTTCTCCTAACCACTAG GTTCCACANCTTCTGGCCANCCTNGCCTTAATCNTCCTGCCCCATAANCCTAACCTGTTTTAAAATACTTATTAAAACAAA GAAAAATAAACAAGAACAAATGGAGAATCTTTNCACTATGACTGCAACTGAAAANGAGGAGTNAATGGAAGGACATGTAC 65 ATCTGGATAAAGTCAGTATACAATGTGGTCTTTGGTGCCAGACCCAAGTTCAAGACCAAGGTGTATGCNATGGGTTTGTT CAAGTTGTCTACCCTTATTATCCCCTCAGTGAAACATGATTAACCATGCTTACCTTGAAGAGTTATCTTAAATATTTGTG TTAATATTATATATATGTACATTACATGGTAAGTGCTAAGTAAATGGTACATGTGAGTCTTTGCTCTAGGCAAGGCGCTGTG

GGGTTTTAATTCAGAAGTTCTTTAAGCTACAGCTGTAATTGAGACAAGAACCGTACACTGTAGTAAGATTAATGTAAAGA AAATATTTAATCTAATTTATTGGTTATTTATTTAACAAATACTTTTATGGGCCTTGCCATGTTCCAGGCACGGTTGTAAG 5 ACAGAGCAGTGAAAAGACTCCCGCCCTACTGCTCCCAACCTCAAATGTCCTGGCCACAAGCCCATCTGTATGTCTTTAA AAAAAATAAATTAAATTTTTAAAAAACATGACTTTCTGGCCAGGCGCAGTGGCTCATGCCTATAACCCTGCACTTAGAGAG GGCAAGACAGAAGGATCGCTTGAGGCCCAGGAGTTTGAGACCAGCCTGGGCAACATAGCGAGACCTTGTCTGTACTAAAAA 10 ATTATTAAAAGAAAATATATATATTTTTTTNAAATCATGACTTTTNCTGATCATACCTGTGGCATACTCATTATAGAAAA GAGCCCCCAAGGGTTCAAATTCCTGAGCGCCGTGTCTTCTCTATAGCTTGCTGTCTTGTTCTATTTGGATATAAAGCTAC 15 CATCAAGCAGAAGAAGCGGGATGCTCTCTACAGAGTCCGAAACAAAACACAGAAAATTAACCTGCTACCATCCTCTAAAG AAGCGAGGGTCTCAGACTTTGTCCCCCTTTTTGTTCCTGCATTGCCCTCCATTCAGATCTTGTCACTTAGGCCTTGGTAGCA TGAGCTATTAACAGCCCTCCATATTINACTANITITTTTTTTTTTTTTTNNAACTCTNGGGAGTTCCTNGTTGCAGAAAN CAACTCAAAGTCTACAGTCTAAAATCATCATCATGTATTTTCATCAGGATGAAATATCGGGCACTCTGCTCAGTGCAAGG 20 TTTTATTAATGATGTGCTGTCAGGGGCTGGATGTTCTGCATATTTGCATATTAAACAGCTGAGTGAAGAAACATTGCTTT TATTGCTGCAGGGAATAAATCAGTTTAAAGCAAGTTCTCATCATTTATACTCGTTTCAGCTAAGTCTTCTTTTATTGAAA TAAATTGTTGAAGTGCTFTGCTCATTCTFTGAATACTGATGAACTTTACCTTGATAGGACNCTCAGGAAAAATAATATTT TCTTAAAGGTGCAGTATTGTTCCATTTTTGAGTATTACTTTAATACATTATTGATAAGTTAATTTAGAAGTATCAAGTGA AAGGGGAAGAAAACAGTTTTGAATAAAAACGGAGTTTCCTCTGGACTATTTTGCCAAATGCATTTTTATTGGTAGAACG 25 TCAAGCAGCTGTTTGACAAGATTCTTGCAAATGTTTTTGGTTTCTCTGCTACTCATTACGTACACTCTGCCAGAAGGTGA 30 GGTCAAACATCCTGAGCCTGTTCTGTGGTCAGTTACTCATTAGCAGCCTCTGCTCTAGGAGGAATAGTTATGGGTCCTTT CATGCATGTGGTGACTTTTTCCATCTCTGGTCTCTATCTTATCTCTTGTGATGAACTCAGGTCTATAAAGCATTTGGGCA  $\tt CTGCCTGGCACATAGGATATGTCCAGAAAACACTAGCTGGTATTAAAACAGAGGAAACATGGGAACTGAGGGTGGTCAGT$ 35 GACATCACATTGTATTTCCTTTATGGTGTCCTTCTGAGTACAGAACCAAACATTTCTTAGGCGTACAATTTCCTGCCTCC GAAGGCTTAAGGTTTTGCCTGGTCTCTCCTGGGTCCTGAGTACCAGTGGCCTTACGTGGCATTTGGTAGATTACA 40 TGCTTAATGAAAAGTGAGTGAATGGGCTGGGTGGTGGTGGTCACACCTGTAATCCTGGCTACTCAGGAGGCTGAGACAGG AGGATCGCTTGAGCCCAGGAGGTCGAGGCTGCAGTAGGGTATGAGCGGGCCACTGCACTTCAGCCTGGGCAACAGAGCGA GANCCTTCTGTCTAAAAANITATTTATCTATATTGAGTGAATAAATGAATGAATGGATTATTTTAGTTTGGCCTNCAATCT TGGGCAAGGCGGAGATCCAGTGCTCAGGAAGCTGAGTCCATGCCAAGATGTGATAATTGTATAAAGAACTACAATAGGCA 45  ${\tt CAGATCTCTTCTTGTGCGTGGGGTTAAGTGCTTTACATGCATCCCCTCATTGACTTCTCAGAGCAGCTCCATAAA}$ CCCAGTGGAGAGACAGGAAAGCAGGGAAGGGGGCAATTGCCAAGCCTGTTTCTAGAATCTCAAGGATGACCATTTGGTGA 50 AGTGACCTGCTTTGTGAAAGGTAGAGAATAGATTACAGGTGCCCGAGATCCTAGAACCCGTTTCTTACCATGATGGCGTT GAGGTAGAGGTAGAAAGATGGGTGAGGTGGGTGCAGTGGGTTGCGCCTGTAATCCCAGCACTTTGGGAGGCCAAGG CGGGTGGATCACCTGAGGTCAGGAGTTCGAGACCAGCTTGGCCATCACAGTAAAACCCCGTCTCTGCTAAAAATACAAAA 55 ATTAGCCAGGCATGGTGTGGGCCTGTAATCCCAGCTACTTGTGAGGCTGAGGCAGGAGAGTCACTTGATCCCGGGG GCAGAGGTTGCAGTGAGCCAAAATTGCACCACTGCACTCCAGCCTGGGTGACAGAGTGAGACTCCATCTCAAAACATAAG GCTCCTATTCCTGTTTCCTTGCCAGGAGAAGTATTGTTTTCATATAAATCATTTGTGACAGAAGCTCCTTATTTTTAAGT GGAAAATGCACATTTAATAACATGAGAATAATGTCCAAACATCTTCTCATTGATGGCTGCCAAGAGAACAGCAGCACTCT 60 TGCTGCCTGCAGAAAGAGACACTCAGAGTCAACTGTTTTAGGGGCCCATGCTGTCATTGCTGCCGCATTTGCTTAGGTGGG CTCTGAGCAGCTTCCCAGACACTCCGTAACCAATGGCAGCTGAGTGCTTTTTGTGCCTTGCAAATCCTCTAGTCAGAG CTCAGTTTTCTCATCTGTAAAGTAGGGATAACATTAGCTTCAGCCCTCACAGGCTTAGAGTGAAGTTTAAATAAGAAAAG 65 GGAGTTCGAGACCAGCCTGAGCAGCATAACGAGACCCGTCTCTGCAGAAAATACAAAAATTAGCCAGGTGTGGTGGCATG CATCTGCAGTCCTGGCTACTCAGAAGGCTGAGGTGGGAGGATTGCGTGAGCCCAGGAGTTCAAGACCAGCCTGAACGACA AAAGGAAANGAAAACAAACNAAACAANAANAGCCNANTGTNAGANGCTGGGCNTNATCCNAATANCTTGAAGGTNAGCNC

GTGTCCCATTGCACAGTTTGGGTATGGAGCACTTAGCCCAGTGTTGGGCACAGTACCTGCTGTGATGGTTAAAGCTTAGT TTTATTGGCCAGGCATGGTGGCTCATGCCTGTAATCCTAGCACTTTGGGAGGATGAAGTGGGGAAAGTTTGAGCCTAG GAGTTTGAGACCAGCCTGGGTAACATAGTGAGACCCTCTGTCTACAAAAAACTAAAAAATTTAGGCCATACTTAGTGGC TCACGCCTGTAATCCCAGCACTTTGGGAGGCCGAGGTGGGGGCATTGCCTGAGGTCGAGAGTTCGAGACCACCCTGGCTA ACATGGTGAAACCCCATCTGTAATAAAAATGCAAAAGATAGTTGAGCGTGGTGGCGCATGCCTGTAGTCCCAGCTACTTT GGAGGCTGAGGCAGGAGAATCACTTGAACCCGAGAGGCGGAGATTGCATTGAGCCGAGATCATGCCACAGCCTGGGCAAC NGAGGCTNAGGTGGGAGGATGGCTTGAGTCCAGAGGTANAGNCTGCAGTNAGNTATGATCTTGCCACNATACATCAGTCT 10 GATAACATCCTAGACACTTAAATCAGAGCCTTTTTAATTATGACTTCATAACACAGGGCTCGTGCCACCCAACATTTCCT CCATATCCAAAAAAAAAAAAAAAGGAAAAAGGGAAGAAGCAAAAGGGGCAATACAGGGCTCTGCCCATTAGAATCTCTAGGG ACAGACCGAGGTTTGAGAGTTCCTGCTCCTGATCTCAGGGGAATCCTGAATTACAGGTGTTAACCTGATTAGCCCCAGCC CAGCTCTTCGTTAATTACCTGAAGTGAATGGGACAGTTTCCAATACTCAGCACAAAGGCGTGCGCAGTGACTCTGTGGCG 15 TACTATCTATTTGGCCTTGGAAAGTTACTCTCTAAGTCAGGGCTTCTTTTCTTCAACTTTGGTGTGAGACTCCGCTGGAG AGCTGGTTAGAAAAACACAAGTCTCGGGCCCCACCCCCAGAGCCCCTCATTCTCTAGTTCTGGGTTGGGGCCCAGGAGT CTGCTTTTCTAGCAAGCGCCCAGATGTCACTGATGCTTACAGCTCTCAGACCACAGTTGGAGCAGTGATTTTTAAAAGTC 20 AATCAGGATCTGCTACAATCGCTTGATATTTGAAAATTGGGCCTAACCCACTATGCCACTCTTCTGTCATGAAAATAACAA TCTTCTATTTAAACTAGTAAACTTAATAGTTTAAAATACTTGGTAGTTTAATAGTTTAAGTAGAGCCACTGAAAGATGGC TCACACCTTTCAGCTCAGTTTTTTTTGTACCAGTGAGGATGAATGTTTCTGCATGTGGGTAGTTGGCACCAGTCTTCAATG AATTATTTTTCCTTTAGCCGGGTCTGGTGGTGGCGTGTACCTGTAATCCCAGCTACACAGAAGGCTGAGGCAGGAGGATA  ${\tt CCACGAGCCCAGGAGTTGGAGGCTGCAACGACTTACGATCATGCCATGGCACTCCAGCCTGGGTGATAGAGCGAGACCCT}$ 25 GTCTCTGAAGATACAAGAAGGCCACATGTGGTGCACCCCTGTAATCCCAGCAGTCTGTGAGACTGAGGCAGAAAGAT TGCTTGAGAAGTTTGAGATTGGCCTGGGCAATATAGCAAGATCCCAACCCTATTAAAAAAATTAAAAAATGAAAAATAAAATT AAANGGANTAATGCCTTNNAATGCCNTGCTGCAAATAGAACANGTGGTGCTTNAGCAGCTTTAGATAATGCATTGTAGGT 30 GAGGATAACACTTCTAAGATGTGAGATTTCAATAAATGAATCTGTAGGCTGCTGTGATGGATACCTTTGGTGGGGTAGGA AGGATCGTCATTTAGAACCTGGGTTCTGACTCCAGATGACTTGTTTTGTTCTATCCCAGAAATATTCCTAAAATCGATTT GCCTGAGCTCAGGAGGGCGGGTGGATTGCCTGAGCTCAGGAGTTGGAGACCAGCCTGGGCAACAAGGCGAAAACCCCATCT 35 CTACTAAAAACATTAAAAAAAAAATTTAGGCGTGGTGGTGTGTGCCTGTAATCCCAGCTACTCTGGAGGCTGAGGCACTAG TATCACTTGAACCGGGGAGGTGGAGGTTGCAGTGAGCCGAGGTTGTGCCACTGCACTCCAGCCTGGCTGACAGAGGGAGA AGGGTGGTCTTGAACTCCTGGGTTCACGTGATCCTCCTGCCTCGGCTTCCCAAAGTGCTGGGATTACAGGCACGAGCTGC CACGCCTCACCTCTTGTTTTCAATACCATTGATAAGTTGTGGTCTTCAGGGACTTGTGGGCATTTTCAAGTTAAATATCC 40 CTGAGGAAAGGAGGCAGTTTTGGGTAACNTGTCTCTTGCGATCCCCTCCTGCACAACTNGTGGCGTTCTCTTTTTCTGAC TAGCTGATTCTGCTGCTGCTGGATTTATTCATTCTTCTCCCTCACAATTTTGGCTCGCACATGCTTCCTTTTTAGCTCAT GACCGTGCAATTCAACCTCATCGCATCTTTTTTATCAGCTGTCCCTGCTGCAACAGGCTTAGAGTTGGTTTCCCAA 45 TTCCCTANGCGCAGAAATCCACTGGCATGAGTCATCTTTCCCATTGGTAGATTGCAGAGCAAACTTCTGGACAGATTTGC CCTTGGCTCATGTATGÅTTGGACCTGCGGTCTGTCCAGGTGTACTCAGAGTGGGGAAGGGGAGCGGTGGCAGGTAATACA AAACCCACCTAAGTAGAAGGACCTATGAACCATGAGGGTTTTCCTTAGCAGGGAGTGCCAGTGGGTAGGGATGACTGGTT TTGCAGTTTAGGGCCAAGTGAGTTGGAATGACAGCTGTGGCGTGTTGAGTCAGATCAAGTCCAGAATTCCTCTCCACCCC ACCCATTTGCAGTTCCCTCAGATTTATTACGGGACCTGGATGTGATGCAAGCATGCCCGCTGGCTCAGGCTGTGCCTCAC 50 AGCTGCAACATCCCTGGGGTGGAGAAGCCATGTGGGACCTCACAGAACACTCCACCGTCCCTGCTAATGGCTGAGAAAGG ACTCTGCCCTCATGGATGGGGTTGGGGGACCTGTTATCTTCTTCCAGGTTAATCTTGGTTTCAGCTGCTTTAAACTCTAC TTTTTAGTGGGACGCATCATACTGAACTATGGAAGCACCATAGTTGTCACCTAGTTGAGCTTCTCTTTGTTCCCATATGT TTCAGTGAAGCAGTTATAGCTTCAGAAAAGAGGGAGCCAGGAAATACACTTGTAATTCATCACTCCTTTTATAGTCAGAG 55 GCCTCTTTGGGGAGTGTTCTCAATGTGATTTTTATTCTGGGGTGTCCTTTGGCCACAATCCTCAGGATTATTTTTTCTCT GTGCTGTTCNACTGTAACATCGTCCACCCTCTGAGATCTTGCTTTTCAGTCTACTGGTATCTCCACTTCTCTCTGCAGCG TGATGTCTAGTCAGAGTTTCCATTCTGTTTTTATGACCCTGGGAGGACTGGGACAGATCTGTGAGGTCATCTTGTCCACC CTCAGCCAGGGCAGGAGTATTCCCTAATGGTAGAGTCAAGTGTTTGGTTTTGGTCTTATTGACTCAAGTGATGAG 60 CACTITIGITATAAATCTTCACCTAGCATGGGAGTTAAGTGCATTTTAAAACTAGACCTGGGGACTATGTATCCTAAAAT ATATTTCACATGGCCATATATGTTTTGCTTGTGTGCTGCTAAATGCAAAGGCAGAAGCTTCTGCTATTGAATGCTTAG CACAGAACTNCCTGTCCTCCCTCTTTGAAATTATNTCCGACAGTTGCCCCTCATTTGGCTTGCCANAGGAGTAAGATCTT 65 GGCTTGTGTGNTTTCTCCCATGTGTGGTGTATCTGTAATCTCGGTCANCTGTTGAGAGCCTGGTGGGAGGCTGATTATTG ACINAGCINTOGGTAGGGAGGGAGGNAGAGACATGGACCCACGGGGAATGGGAAGAGAAATAGAAATAGGGAATTTGAAATG GAAATAAAACAAAAGGGCAGGAAAGGAAGAAATAAAGAGAATGAGATAAAAGGAAAAGAAAGTGCAAGTAGNATTTGGGA

TCTATAGATTGGGGAAAGACATTCATACNAGTCNAGGACCNAGATGTTCACTGGNAANGTTTTTTCCTTCTGGNATCCTT CMITTINGCTGTANGGAATNCTGGTTCNTCAAAGTGTNGGCTCCCNAGGCCAGCAACACCAGCATCANCNTCAGNAAATN CTGTTAGNAAGGNCCAGGCGNCGGTGGCTCAGGCCTNGTAATCCCAGGACTTTGGGAGGCCGAGGCGGGGGATCACGAG  $\tt GTCAGGAGATCCAGACCATCCIVIGGCTAAGTCGGTGAAACCCCGCCTCTACTAAAAATANCAAAAATTAGNCCAGGGGT$ .5  ${\tt GGTGGCGGCNCGCCTGTAGTNCCCCAGCTANGTCGGGAGGCCNTGAGGCAGGAGANTGGTNGTCAACCCGGGAGGTGGAGT}$ TCTGTTAGAAATGCATATTTTCTGTTTTCACCCCAGAAATCCTGAATAAGAAACACTAAAGGGGAGTGGGCCCAGCTATT TGTGTTTTTGGAAGAACTCCTGTTTTAATTTGTTTTTTCGGAAGTCCTCCAGTTTGAGAACCAATGATAAGGACATTTTT  $\tt CCGGGAATCCAGTTGTTTTAGGAAAGGCCCCAGTAGGCATTTATGTTTATAAGCAACTCCACCCTGCACTCCATATGCCTT$ 10 CTGTAGCTATCTAACAGAGACAGAGTTGACTTGCAGAAACTGTTTTCTCTGGCCAGGAGACAGGCTTCGTTTTCGAAAACT CACCCAGGAAGGCAGTGTTCTTTTTCAAAAGGCATTTTTCTGTTGACTGTGCATGAAGCCACATAGTAATAAACAGTT TCCATATCCAAGCAGCTAAGGCTTGTGCCTTGCAAGTTAAGTGGAACATCAGGATCTATATCTCAGTTTTCCTTATGTTT CCCCAGTTGGCACATCATGGCCAACAAGAGAGTAGGGATCATTAAGGAGTTTATTTTCATCTTTATTTTATCATTTAAAA CACATTTTTTTTTCCAATGAGAGTACTGATGACATAAAAGGTTATACATTGAATAACCACCCAAATTAGCAGTTGTTTC ATATITACACTGTTCAACACAGTTCTCTTGTGTCTGTTCATGATATAACAGTAAATCCAAGTTGCTTTAAGTAGATATTG GAAATATGAACCCAATATGTTCTTAACATCTCTATGTCGTAATTCTAATTTAAAATCAAAATCTCATCAAAATTACATTTT AGATTAAAGGATTGTACCTATCGAAAGAAGAAGAGAATCGAAAATGCGAAAGTCCTTCATTTTCAGTGTGGCCTGAGATTGTT GATGCAGCTTCTCAGGGCGTCCTAATTGTGACTCTGCCTTGCCATTCTATGTTTTATCGGAATACGCAGACATATACTTT 20 ATGAGGTTGGGTAATGAAGAGAGAGAGCCCCAATAAACATATTTTCTAAGAGTAATGGTTATCTATAGCTCAGGAACCC TTGGTTAGCACAGCCTCTATTACACAGTACTAGGCAAGCAGTTCATAGCTCAATTAGATCTAACTTGCTTCATTTTTAGG CATTATGTTATTCTAAATTAACACTGTATTTCATATTCTCCAGGTCTGACTATTAACCAGATTTTGGAACCTTTAGGGCT TATTATTTAGTAATCCCTGAAGCTCTCAAGTAGGCGTTTTTAAATTCATGCATTAGAACAGATTAAAAATTAGCTAGAAA CGCATGTTAAATGGCCCACTCCCTTTCTTTTGCTAATTGTGCTAGAAATGAAAAAGAAAATGCAAGTGAGGTCAGATCTA 25 GTGTGGTACAAATGAACTTGCTACTTGGTTTGCTGCCAATTGCTGCCGAAACAGGAGTTATTTAAATTAAGTAAATAATT TTTGAAATCTTCTTAGAATGTCACAGCCCACAATTCAAATTCACAGACCAGGAATGGTTATTATTTCTATATATCTTAAA AGATGTCCAAATGTTTTGAAACGCAGTGATTTATTTAAGTTGTAGAAAGCTTGGTTTTATTTCTTGTTGCATCGTCTTTA 30 TACTTTAAAAAAAAAAAAAAAAGATCCTGACAAATCCTACTTTTTCAGGTCCTGATGCACTAAGTCTCATTCACTTCTTTC TATTTTCCTCTCTCTATTGCATATTAACCCACCATATTGAGAGAATAGAAACTTTTGCCTTCATTATATCACCTTTACA CCCCAGGACAGGTGCCCTCCTCAGCGGAGACAACTGTCCCCCTCCATCCGGCAGGAGTACTGCAGACATCCTTCCAGCCA CTGCTTCTCTACCGGCGCAAATCCTCCCCCAAGGGATAATTGATAATGTCTGAGGCATTTTTAATTGTCACAACTTGGGG AAGGGGCAAGGGATTGAGGGAGAGTGCTCCTGGCATCTGGTGGGTAGGGGTTAGTGATAGGGTTCGGCTGTGTCCCCACC 35 TGCAGITACCCCCATGATGTTTTCATGGTAGGGAGTGAGTTCTCACAAGATTTGATGGTTTTATACGATGCTTTTCCTCC TTTGCTTGGCACCTCTCCTGCTGCAGTAAGAAGAAAGACATGTTTGCTTTCCCTTCCACCATGATTGTTAAGTTTCC TGAGACCTCCACAGCCATGCCAAATTGTGAGTCAGTTAAATCTCTTTGCTGTATAAATTACCCAGGCTTGCATATGTCTT TATTAGTGGCATGAGAACAGACTAATACAGTCAGGGATGCTGCAGAACATCTCCAAACACACAGGACTCCCACCCTCTAC 40 TTCCACCCCACCAACAAAGAATGATTCAGCCCAAAATGGCAGTAGTGACCTTGTTGAGAAATGCTGTTCAAGCCATACGT CACCATTGGAAGGTTGCCAAACTGTGCTTTGCACACACATGCTGTCTGCACGCCTTGTATTTTTCTCTTTGCTTAGTCCT GCTCATGCTCTCTAAACACCCCAGACATCATATCTCTTTAAGAAACTCTGGCTGAGTCCCATAATGTTCTGGGGCAACTT  $\tt CTGTCTTCCCTCTGGCAAAGAATCCTTGACCAAACTTTAGCTCAGCTCCTCAGAGCCCACTTCTCAACTAGA$ 45 TCCCTTCACCCTTCATGTCTGATCACCCTTGCCTGCCTTCAGCAAAAATCCTGCTAACTTGGTTAAGTTGGAATACTCCT ACCCTTGTGGTTCCNTTGGAGTAATTTGCATCCACTGACCCTCCCACTCCCTGCTACTCTGTTCCTTGACTATAAATCT 50 AATGATTCTCCTACCTCAGCCTCCTGAGTAGCTGGGATTACAGGNTGCCCGCCCCATGCCCAGCCAATTTTTGTATTTT GGTGGCTCATGCCTGTAACCCCAGCACTCTGGAAGGCTGAGTCAGAACGATTGCTTGAGCTGAATTGTTCAAGACTGCCC 55 GCATTTGGTGGAAATAGGGCACACACATGAATATATTCACAGTTGCAAACTCAGAAGGATACTCCCAACCTGGTTCTTTG GCTTGTCCCTCCATCTGGGTGCTTTCCAGTCACAGCCTGGATGCATGTATGAATAAACTTCTACCATTAAGTCCCTGAAT 60 GCCTACCCAGGATGGCTTGATGTTGTCTCTTAACACCGTATCAATACCTGGGGGTTTTCAAATATTGCAGGTGGCCGAAG CCTTTGTGTTGAGGTTTCTGTAGTGTTTATCCATTTGTGAAACCAGGCCTCAATCTATATGTCCAACGCCATTCGTAGAC CCCCTTTGATAATCTCCACTAAGCAGACATACTCGATACATCTTCACTAATGAGTTCTGACTTCATAAAAAGTATTAATG ACTICTTTTTGAAAGTAAGAGTGCTTTGAATACCAGTCGTTATTGCTTTAGAAGTTCATAAAAGCAAAAGCACAGTATTT 65 CCCCAGTGTTTGTGCGATAAGAGAATAGAATGTAGGTCCCAGCGCCTTAGAATTTTAAGCTATGCCTTCTCTTGGTTTG TGAATTTCCAGGTTTTCAGGCCTGCCTGGTAGAAGGAGGTTCACTTCTGATTGTCAGTGACTTTGGTGAGTTCTTACCTT GTAAAAGATTTACAATTATTTCAATTTTCAACATAGCTTTATCTTATGACAAAGGTGACAGAAAGGAAATCTCCTAAGTTG GCCTACAGGGTGCTTTAGAAAACATCTGGCTGGGCATGGTGGTTCACACCTGTAATCTCCACACTTTGGGAGGCTGAAGT AGGCTGAAGTGGGAGGATGGTTAGAGCCTAGGAGTTCGAGACCAGTCTGGGCAACAACGTGAGATCCTGTCTACAAAA

AATAAAAAAAATTATCTGGTATAGTGGTGTGCACCTGAAGTCCCAGCTAACTGGGAGTCTGAGGCAAGGAAATTGTTTG AGCCTAGGAGGTTGAGAGTGAGCCGTGTTGCTGCCACTGTACTCCAGCCTGGGCAACAGGACAGGACCGTGTCTC 5 TTGTGGGGGGGCCCAGGGGGGGTAATTGAATCATGGGGCCCAGCCTTTCCCATGCTATTCTCATAATAGTGAATAAGT CTCATGAGATCTGATGGGTGTATCAGGAGTTTCCGCTTTTGCTTCTTCCTCATTTTCTCTTGCCACTGCCATGTAAGAAG TGCCTTTTGCCTACCACCATGTTTCTGAAGCCTTCCCAGCCATGTGGAACTGTAAGTCCAGTTAAACCTCTTTTTCTTCC CAGTCTCAGGTATGTCTTTATCAGCAGCGTGAAAACGGACTAATACAGTGAGGAAATCCATGTGTTAGGAAGGGAGTGTG GTTGTACTTCAACCTGGAACTGTCTAACTCTTAAGGTTTTATTAATATCTAGTCCATTTCTCTCAATCTAATAGTAAATG 10 GAAGAGAACCACCTTTTCCAATTCCTTTTGAACATTTCAAAGGGTTTTCTGAAAGGACTTAAAGAAACCATA GCTTCCTTACCAGTTCCCAAAGCTTCAGTCCTTACCAAAGTGTACATTGCCTTTAAGGAGATTTGTTTTCCATCAATCCCT CCCATTTACAAGGAATTACAGAAGAGTGATGCCCCCTTCAAAGTGGCTCACACCTGGCTGACATCTGTTCATTAAGAATG CCTGCCTTTGGGTTCTAAGACGTCCAAGGAGCTCTTATGGGTAACACCTGTAGATTTATAGACGTTCCTCTCTGACTGTA AGGCCCATATGCCTGAATCTCTCACCCCCATGTTTATAAAACTTAACAATTGTGGAAGCAATGAATTGAAGGACTAGGGT 15 CACCAGTGGAGTCCCATAAATAGGTTGTTTATGATCCCTGTGAAACAAGAAGACCCTCTTAATTTCATGCTTCTTAAACT GGGGTATGAGTGGCCCCAGGTTTCCCTGTTGGGGGTACTGATACCAGAGTTCATTTGAAGTCATTTGGAAACCAAGGCATA AGATATCGTTTCCATCGTCTTTTAAAGCTAAAACTTGANGTTATTAAACACCCTTCTCCCCTGGGGATCACCTTTTCN CTATNGGGGTTGCATNNCCACGGAAGAGNTTINGAAAGCCCAACCANTANTGGACANTCATNATTATINCATTITTATTT 20 TGTTGCAGACAATGTATATTTAAAAAGCAATTATTTGCCCATCTCTTGTTCAACTCAGATATTGACTGCCTTTCTGTATT TCTGGCTGGCATTGTTTATCTCCACCTCATGGTTTTTACTATGGTTCTAGAGGTCTAGCCTACAAAGAGAATGCTTCCC GTCCCCACCACTACCCACAGGACCCTCTGCATATCTCAGAGGAATTTCTCAGTGTTCCAGTTAATTTTCTCTCTGTTTCC TTPATTACTTCTAAGTTCCATTGCAAAAATATGCTGCCTGCTCTGTCAGCCACCCTATATGCCTATTTAGTCCCAGTTTT 25 ACACAGAACCAAATAGTCATAGAGTAGTATTTCAGGTGGGGGGCCCTCCTCTAGGGCAGTGGAGACAATGTCACCTGTCG GTGTGCTACTAATCGCCCTCTATTGCACAGGGTGGCCCTTACCACAGAGAACTATGCAGCTCTAAACATGCGCCAGCCCCA  ${\tt AGGCTGAGAATTGTTGATCTAGGGGAAGATGTGATTTCATTCTTCATGCTTGTAAATTATTATTTAAGCTGTGAATACCC}$ 30 ATGTAAAAAGGATTTAGACGTCTGGACGTGGTGGCTCATACCTGTAATCCCAGCACTTTAGGAGGCCGAGGCAGNGTGGA TCGGTTGAGGTCAGAGTTCAAGACCAGCCTGGCCAACATGGTGAAAACCCTGTTTCTACTAAAAATATAAAAANNITACCT AGGCGTGGTANGTGNTGTGCATATAATCCCNAGCTACTCTGTAGGCTGAGGCAGGAGGNCAGAGGTTGCGGTGAGCTGAG 35 AATGGTACAGTCAGAGGTTAGGGGTCGGGTCAAAGCGATCCCCCAGAGACCTGTGGAAAGTGTGGTTCTGTCTACAAGC TGCGACCATGGTCTTTACTGCTTCTGCAAATACTTGACAAAAAGGGCCACACNTCTTAGCTGGACTTTTCCTCCCTTTCC TGAAACAANTGCCCTTCCCATTGTCAAGGCAGAAGCCAGCCTCCACTGAGAANGCGTCAGACACACGTCAGTCTTNGCT TTCCATTGCTTTNGCTCCAGTATCCNATTTGAANATTCANGTNGCAAACCCATAAANTTCCACNTTTGNCCTCTGGTAGC AGCCNTGCATNGGTGNTGNTATATINGAACNACTANGAAACACANGTAAANTCCAGCCCNATTTNATINCACATTAANCC 40 ANGCAAANGGCATTNCTGCANTNGCCCATGTNAAATACTGGNAAATTACNTGACNATGGCCTTCTAGACCATGAAAAAGAC AGAAGCATATGGCAGAATTCATATGTGAACAGATTGCTTTTTCTCATAAGAACGCTTTATTGGAATATCAACTNATTACA GCTTTTTGAAGTTACTCTTCCTGCTCTTNNNGATTTAAGTCCNIGAATCACCCCACTACTCTTTTTTTTTTTTTCCNGNCTG CATTCTGNCTANTGTATCTTTACATCTGCTNTCCTGCACTTTCTAAATGGCCTACTTAAACCTTGANGGTAGGTCCTTCA 45 GTAAACACAGGGAATAGATGAAGCAAGCTGCTTCTTTCAAATGCTCTTCCAATATGAAGCAAAATATTATTGATCTAGAC TGCCTGCTACTTTCATTTACCATGTTACTGCTCGTGGGATTACAGGNCACAAAGGNNTTTCATAAANTTTCAAATGAAAT ANTGAACATTTGGNTGTCNAAAGTACTGTTAAGGTATGAAAACCCTGCTAGTATTAGTTCCCTTTTGTTATTATTCTATT ATTATTATTATTATTGTGTTTACATCCACAGGCAATCACATATTTTAGGTTGTGGGGAGCAAAGCAGCTTCCCCCCACTT 50 CTCTTGCCCTATTTGCCGTGTCTCTTTTCTGTGATTCGGGAGCACATTGATACCCTTCTTTTTGGAGCAGAAGCTTGTC TTTCATGATAGAAGTAGGTCATGGGGGGGGGTTAGCTGACTTCATCAGAGAGTAGCATGCAGATCCCACCTGTGAGGCTAT CCAAGGTCACAGCTGGAAATAAAACTGTGTATTCCAAATCAGAGGGGCAATGCAGGAATGGATCAAAGGAATGAAGGATC AAGTTGTCAGCCAAGAGACCAAGAGCCAGACACAGGGAACCTGTGACAAAAACGAAAAACCAATAAAAACATATATTGAG 55 CATTGACCAGGTGCCCAATATTTTAATGTCCCATGGGTGTGCATCAGGTACGCTGTGGAAGGACAGATGTCATTCCTTAA AGGGCTGGACTGAATTAGACCAGGGGTTCTCAAAGTGGGTCCCTGGACCGGCAGCATCACCATCACCTGGAAACTTGT TAGGCTGCAGTCTGTGTTAAGCTTTCTGGGTGATTCTGATACACGGTCAAGTTTGAGATGTAGCAGGAGAAGCAGGAAAC 60 CTTTTTAACTCTCTCTTGCCAGCAACTTCCTTAACAAAGAGTGATACTAATACCTGCCTTTCTGTCTTTGGCACATTACG CTAAGTGACTTCAGACTCTATAGACAGTCCCTGACTTATAATGGTTTGACTTAGATTTTTTCACCTTTGGGATGCTGAGA GTAGGATACTCTCTCACAATGTTAGGCCACAGCAGCGAGCTGCAGCTTCCAGTGATCACAAAGGGCAAAGAATCGATATT 65 CNTACCAGGCACGGTGTTGCCTGATAACCTTGCCCAGCTGTAGGCTAATGTGTTCTTTTTTATATTTTCTTTAATTTTTT TAAATTTCCACCTGTTTTGGGGGGGGTACAGGTGGTATTTGGTTACATGAGTAAGTTCTTTACTGGTGATTGGCGAGACT TTGGTGCACCCATCACTCGAGCAGTATACACTGCATCCAGTTTGTACTCCTTTATGCCTCACCCTTTTACCACTCTTTCC CTCTCAGTCCCCAAAGTCCATTGTATCATTCTTATGCCTTTACATCCTCATAGCTTAGCTCCCACTTATAAGTGAAAACA CACAGTGCTTGGTTTTCCATTCCTGAGTTACTTCACTTAGAATAATGGTCTCCAGTCCCAGTCCCAGGTTGCTGAAAATGCC

## FIGURE 17

## BAC #1 contig #208

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## BAC #1 contig #779

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